



**Teck Coal  
Environment Office**  
Bag Service 2000, 421 Pine Avenue    +1 250 425 3352 Tel  
Sparwood, B.C. Canada V0B 2G0    www.teck.com

## Technical Report Overview

**Report:** 2019 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

**Overview:** This report presents the 2019 results of the regional groundwater monitoring program and the site-specific programs at Fording River Operations, Greenhills Operations, Line Creek Operations, Elkview Operations, and Coal Mountain Operations required under Permit 107517. This report summarizes the results of groundwater quality in 2019 and compares them to relevant screening values. It also compares groundwater chemistry to nearby surface water chemistry to understand groundwater transport pathways.

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

### For More Information

If you have questions regarding this report, please:

- Phone toll-free to 1.855.806.6854
- Email [feedbackteckcoal@teck.com](mailto:feedbackteckcoal@teck.com)

Future studies will be made available at [teck.com/elkvalley](http://teck.com/elkvalley)



**SNC • LAVALIN**

# 2019 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Fording River Operations

Greenhills Operations

Line Creek Operations

Elkview Operations

Coal Mountain Operations

Regional Groundwater Monitoring Program

## **VOLUME III OF III**

Prepared for:

Teck Coal Limited

March 31, 2020

Internal Ref: 671557 › Final › V1

# Appendix X

Certificate of Analysis





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

Date Received: 14-FEB-19  
Report Date: 28-FEB-19 10:06 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2232518  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190213-1420  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

28-FEB-19 10:06 (MT)

Version: FINAL

		Sample ID	L2232518-1	L2232518-2	L2232518-3	L2232518-4	L2232518-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19
		Sampled Time	11:30	12:00	12:00	11:30	12:00
		Client ID	FR_09-04-A_QTR_2019-01-07_N	FR_09-04-B_QTR_2019-01-07_N	FR_DC2_QTR_2019-01-07_N	FR_FLD_QTR_2019-01-07_N	FR_TRP_QTR_2019-01-07_N
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1160	1160	1170	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)		626	642	648	<0.50	
	pH (pH)		7.63	7.57	7.64	5.42	5.28
	ORP (mV)		405	346	401	363	380
	Total Suspended Solids (mg/L)		<1.0	26.7	19.3	<1.0	<1.0
	Total Dissolved Solids (mg/L)		865 <sup>DLHC</sup>	852 <sup>DLHC</sup>	885 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)		0.15	7.25	4.97	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		14.0	13.9	16.8	1.4	1.4
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		360	361	359	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		360	361	359	<1.0	<1.0
	Ammonia as N (mg/L)		0.0361	0.0750	0.0522 <sup>RRV</sup>	0.747	0.140 <sup>RRV</sup>
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)		6.4 <sup>DLHC</sup>	6.3 <sup>DLHC</sup>	6.3 <sup>DLHC</sup>	<0.50	<0.50
	Fluoride (F) (mg/L)		0.32 <sup>DLHC</sup>	0.31 <sup>DLHC</sup>	0.31 <sup>DLHC</sup>	<0.020	<0.020
	Ion Balance (%)		85.8 <sup>DLHC</sup>	87.5 <sup>DLHC</sup>	88.7 <sup>DLHC</sup>	0.0	0.0
	Nitrate (as N) (mg/L)		1.12 <sup>DLHC</sup>	1.05 <sup>DLHC</sup>	1.03 <sup>DLHC</sup>	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		0.0089 <sup>DLHC</sup>	0.0062 <sup>DLHC</sup>	0.0073 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.226	0.147	0.247	0.203	0.071 <sup>RRV</sup>
	Orthophosphate-Dissolved (as P) (mg/L)		0.0047 <sup>RRV</sup>	0.0038	0.0033	0.0014	0.0016
	Phosphorus (P)-Total (mg/L)		<0.0020 <sup>RRV</sup>	0.0045 <sup>DLHC</sup>	0.0043 <sup>DLHC</sup>	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		366 <sup>DLHC</sup>	369 <sup>DLHC</sup>	369 <sup>DLHC</sup>	<0.30	<0.30
	Anion Sum (meq/L)		15.1	15.2	15.1	<0.10	<0.10
	Cation Sum (meq/L)		13.0	13.3	13.4	<0.10	<0.10
	Cation - Anion Balance (%)		-7.7	-6.7	-6.0	0.0	0.0
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.91	0.67	0.80	<0.50
Total Organic Carbon (mg/L)			1.21	0.97	1.20	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		LAB	LAB	LAB	LAB	
	Dissolved Metals Filtration Location		LAB	LAB	LAB	LAB	LAB
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		0.00010	0.00010	0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)		0.0925	0.0957	0.0892	<0.00010	
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2232518-6 WG 13-FEB-19 13:00 FR_TT43_QTR_20 19-01-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2280			
	Hardness (as CaCO3) (mg/L)	1280			
	pH (pH)	7.73			
	ORP (mV)	448			
	Total Suspended Solids (mg/L)	1.6			
	Total Dissolved Solids (mg/L)	1870	DLHC		
	Turbidity (NTU)	0.75			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	378			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	378			
	Ammonia as N (mg/L)	0.0450			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.18	DLHC		
	Ion Balance (%)	86.9			
	Nitrate (as N) (mg/L)	95.0	DLHC		
	Nitrite (as N) (mg/L)	0.0135	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021			
	Phosphorus (P)-Total (mg/L)	0.0050			
	Sulfate (SO4) (mg/L)	744	DLHC		
	Anion Sum (meq/L)	29.8			
	Cation Sum (meq/L)	25.9			
	Cation - Anion Balance (%)	-7.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.61			
	Total Organic Carbon (mg/L)	0.69			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB			
	Dissolved Metals Filtration Location	LAB			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00038			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0792			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2232518-1	L2232518-2	L2232518-3	L2232518-4	L2232518-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19	13-FEB-19
		Sampled Time	11:30	12:00	12:00	11:30	12:00
		Client ID	FR_09-04- A_QTR_2019-01- 07_N	FR_09-04- B_QTR_2019-01- 07_N	FR_DC2_QTR_201 9-01-07_N	FR_FLD_QTR_201 9-01-07_N	FR_TRP_QTR_201 9-01-07_N
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.030	0.031	0.030	0.046	
	Cadmium (Cd)-Dissolved (ug/L)		0.955	0.931	0.891	<0.0050	
	Calcium (Ca)-Dissolved (mg/L)		130	136	139	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)		1.12	1.07	1.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Dissolved (mg/L)		0.017	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)		0.0873	0.0916	0.0892	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)		73.1	73.4	73.3	<0.10	<0.0050
	Manganese (Mn)-Dissolved (mg/L)		1.30	1.32	1.31	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.00187	0.00180	0.00171	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)		0.00712	0.00729	0.00743	<0.00050	
	Potassium (K)-Dissolved (mg/L)		5.49	5.32	5.26	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)		2.38	2.25	2.32	<0.050	
	Silicon (Si)-Dissolved (mg/L)		2.50	2.61	2.62	2.60	
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)		6.21	6.16	6.12	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.217	0.224	0.228	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)		0.000058	0.000058	0.000062	<0.000010	
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)		0.00657	0.00603	0.00627	<0.000010	
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)		0.0033	0.0031	0.0030	<0.0010	

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2232518-6 WG 13-FEB-19 13:00 FR_TT43_QTR_20 19-01-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.021			
	Cadmium (Cd)-Dissolved (ug/L)	0.0526			
	Calcium (Ca)-Dissolved (mg/L)	290			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.75			
	Copper (Cu)-Dissolved (mg/L)	0.00056			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0886			
	Magnesium (Mg)-Dissolved (mg/L)	136			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00154			
	Nickel (Ni)-Dissolved (mg/L)	0.00127			
	Potassium (K)-Dissolved (mg/L)	4.28			
	Selenium (Se)-Dissolved (ug/L)	305			
	Silicon (Si)-Dissolved (mg/L)	1.74			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.60			
	Strontium (Sr)-Dissolved (mg/L)	0.279			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00034			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.0119			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0015			

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

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - DOC, DIS METALS LAB FILTER+PRESERVE

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2232518-4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2232518-4
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2232518-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2232518-4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2232518-1, -2, -3, -4, -6

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

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

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

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

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

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

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

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

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

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

**HARDNESS-CALC-VA**              Water              Hardness                      APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL**                      Water              pH                      APHA 4500 H-Electrode

## Reference Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

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

---

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

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

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

### Chain of Custody Numbers:

20190213-1420

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 1 of 13

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4518771</b>							
<b>WG2992103-3</b>	<b>DUP</b>	<b>L2232518-1</b>						
Acidity (as CaCO3)		14.0	15.9		mg/L	12	20	20-FEB-19
<b>WG2992103-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.1		%		85-115	20-FEB-19
<b>WG2992103-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4519458</b>							
<b>WG2993088-3</b>	<b>DUP</b>	<b>L2232518-1</b>						
Alkalinity, Total (as CaCO3)		360	363		mg/L	0.6	20	21-FEB-19
<b>WG2993088-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	21-FEB-19
<b>WG2993088-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4514811</b>							
<b>WG2991211-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			88.8		%		80-120	19-FEB-19
<b>WG2991211-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4511417</b>							
<b>WG2990387-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-FEB-19
<b>WG2990387-2</b>	<b>LCS</b>							
Bromide (Br)			102.6		%		85-115	15-FEB-19
<b>WG2990387-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-FEB-19
<b>WG2990387-4</b>	<b>MS</b>	<b>L2232518-4</b>						
Bromide (Br)			91.2		%		75-125	15-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4521930</b>							
<b>WG2993532-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			91.1		%		80-120	21-FEB-19
<b>WG2993532-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-19





## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4522011								
WG2993524-2 <b>LCS</b>								
Dissolved Organic Carbon			100.6		%		80-120	21-FEB-19
WG2993524-1 <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-FEB-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4521930								
WG2993532-2 <b>LCS</b>								
Total Organic Carbon			95.3		%		80-120	21-FEB-19
WG2993532-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-19
Batch      R4522011								
WG2993524-2 <b>LCS</b>								
Total Organic Carbon			99.1		%		80-120	21-FEB-19
WG2993524-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	21-FEB-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch      R4511417								
WG2990387-3 <b>DUP</b>								
Chloride (Cl)		<b>L2232518-4</b>	<0.50		mg/L	N/A	20	15-FEB-19
WG2990387-2 <b>LCS</b>								
Chloride (Cl)			100.5		%		90-110	15-FEB-19
WG2990387-1 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	15-FEB-19
WG2990387-4 <b>MS</b>								
Chloride (Cl)		<b>L2232518-4</b>	89.7		%		75-125	15-FEB-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch      R4519458								
WG2993088-3 <b>DUP</b>								
Conductivity (@ 25C)		<b>L2232518-1</b>	1160		uS/cm	0.2	10	21-FEB-19
WG2993088-2 <b>LCS</b>								
Conductivity (@ 25C)			102.1		%		90-110	21-FEB-19
WG2993088-1 <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-FEB-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4511417</b>							
<b>WG2990387-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	15-FEB-19
<b>WG2990387-2</b>	<b>LCS</b>							
Fluoride (F)			102.7		%		90-110	15-FEB-19
<b>WG2990387-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-FEB-19
<b>WG2990387-4</b>	<b>MS</b>	<b>L2232518-4</b>						
Fluoride (F)			91.9		%		75-125	15-FEB-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4511934</b>							
<b>WG2990363-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.1		%		80-120	17-FEB-19
<b>WG2990363-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-FEB-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4510129</b>							
<b>WG2989999-2</b>	<b>LCS</b>	<b>TMRM</b>						
Calcium (Ca)-Dissolved			105.5		%		80-120	15-FEB-19
Magnesium (Mg)-Dissolved			101.8		%		80-120	15-FEB-19
Potassium (K)-Dissolved			110.7		%		80-120	15-FEB-19
Sodium (Na)-Dissolved			99.6		%		80-120	15-FEB-19
<b>WG2989999-1</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-FEB-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4514811</b>							
<b>WG2991211-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			93.6		%		80-120	19-FEB-19
Antimony (Sb)-Dissolved			87.9		%		80-120	19-FEB-19
Arsenic (As)-Dissolved			90.0		%		80-120	19-FEB-19
Barium (Ba)-Dissolved			93.2		%		80-120	19-FEB-19
Bismuth (Bi)-Dissolved			93.8		%		80-120	19-FEB-19
Boron (B)-Dissolved			86.0		%		80-120	19-FEB-19
Cadmium (Cd)-Dissolved			88.3		%		80-120	19-FEB-19



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4514811</b>							
<b>WG2991211-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			87.5		%		80-120	19-FEB-19
Chromium (Cr)-Dissolved			90.2		%		80-120	19-FEB-19
Cobalt (Co)-Dissolved			88.3		%		80-120	19-FEB-19
Copper (Cu)-Dissolved			86.5		%		80-120	19-FEB-19
Iron (Fe)-Dissolved			82.5		%		80-120	19-FEB-19
Lead (Pb)-Dissolved			93.9		%		80-120	19-FEB-19
Lithium (Li)-Dissolved			94.2		%		80-120	19-FEB-19
Magnesium (Mg)-Dissolved			94.8		%		80-120	19-FEB-19
Manganese (Mn)-Dissolved			93.0		%		80-120	19-FEB-19
Molybdenum (Mo)-Dissolved			93.1		%		80-120	19-FEB-19
Nickel (Ni)-Dissolved			89.4		%		80-120	19-FEB-19
Potassium (K)-Dissolved			93.5		%		80-120	19-FEB-19
Selenium (Se)-Dissolved			90.6		%		80-120	19-FEB-19
Silicon (Si)-Dissolved			87.3		%		60-140	19-FEB-19
Silver (Ag)-Dissolved			91.4		%		80-120	19-FEB-19
Sodium (Na)-Dissolved			92.4		%		80-120	19-FEB-19
Strontium (Sr)-Dissolved			90.3		%		80-120	19-FEB-19
Thallium (Tl)-Dissolved			92.1		%		80-120	19-FEB-19
Tin (Sn)-Dissolved			91.6		%		80-120	19-FEB-19
Titanium (Ti)-Dissolved			90.2		%		80-120	19-FEB-19
Uranium (U)-Dissolved			93.8		%		80-120	19-FEB-19
Vanadium (V)-Dissolved			93.4		%		80-120	19-FEB-19
Zinc (Zn)-Dissolved			88.2		%		80-120	19-FEB-19
<b>WG2991211-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4514811</b>							
<b>WG2991211-1</b>	<b>MB</b>	<b>LF</b>						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-FEB-19
<b>Batch</b>	<b>R4522354</b>							
<b>WG2993465-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	22-FEB-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-19
Boron (B)-Dissolved		0.046	0.047		mg/L	2.8	20	22-FEB-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-FEB-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-FEB-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-FEB-19



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4522354</b>							
<b>WG2993465-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-19
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	22-FEB-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-FEB-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-FEB-19
Silicon (Si)-Dissolved		2.60	2.56		mg/L	1.3	20	22-FEB-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-FEB-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-FEB-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-FEB-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-FEB-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-FEB-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-FEB-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-FEB-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-FEB-19
<b>WG2993465-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	22-FEB-19
Antimony (Sb)-Dissolved			96.2		%		80-120	22-FEB-19
Arsenic (As)-Dissolved			96.6		%		80-120	22-FEB-19
Barium (Ba)-Dissolved			103.6		%		80-120	22-FEB-19
Bismuth (Bi)-Dissolved			104.4		%		80-120	22-FEB-19
Boron (B)-Dissolved			91.8		%		80-120	22-FEB-19
Cadmium (Cd)-Dissolved			98.4		%		80-120	22-FEB-19
Calcium (Ca)-Dissolved			97.0		%		80-120	22-FEB-19
Chromium (Cr)-Dissolved			99.0		%		80-120	22-FEB-19
Cobalt (Co)-Dissolved			97.7		%		80-120	22-FEB-19
Copper (Cu)-Dissolved			96.5		%		80-120	22-FEB-19
Iron (Fe)-Dissolved			93.9		%		80-120	22-FEB-19
Lead (Pb)-Dissolved			102.2		%		80-120	22-FEB-19
Lithium (Li)-Dissolved			96.0		%		80-120	22-FEB-19
Magnesium (Mg)-Dissolved			98.2		%		80-120	22-FEB-19
Manganese (Mn)-Dissolved			101.0		%		80-120	22-FEB-19



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4522354</b>							
<b>WG2993465-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Dissolved			100.1		%		80-120	22-FEB-19
Nickel (Ni)-Dissolved			94.6		%		80-120	22-FEB-19
Potassium (K)-Dissolved			98.7		%		80-120	22-FEB-19
Selenium (Se)-Dissolved			97.1		%		80-120	22-FEB-19
Silicon (Si)-Dissolved			92.3		%		60-140	22-FEB-19
Silver (Ag)-Dissolved			84.7		%		80-120	22-FEB-19
Sodium (Na)-Dissolved			95.3		%		80-120	22-FEB-19
Strontium (Sr)-Dissolved			96.6		%		80-120	22-FEB-19
Thallium (Tl)-Dissolved			98.8		%		80-120	22-FEB-19
Tin (Sn)-Dissolved			95.7		%		80-120	22-FEB-19
Titanium (Ti)-Dissolved			92.8		%		80-120	22-FEB-19
Uranium (U)-Dissolved			103.6		%		80-120	22-FEB-19
Vanadium (V)-Dissolved			100.6		%		80-120	22-FEB-19
Zinc (Zn)-Dissolved			99.7		%		80-120	22-FEB-19
<b>WG2993465-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-FEB-19



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4522354</b>							
<b>WG2993465-1</b>	<b>MB</b>	<b>LF</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-FEB-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4521091</b>							
<b>WG2993488-3</b>	<b>DUP</b>	<b>L2232518-6</b>						
Ammonia as N		0.0450	0.0481		mg/L	6.7	20	21-FEB-19
<b>WG2993488-7</b>	<b>DUP</b>	<b>L2232518-3</b>						
Ammonia as N		0.0522	0.0550		mg/L	5.2	20	21-FEB-19
<b>WG2993488-2</b>	<b>LCS</b>							
Ammonia as N			98.3		%		85-115	21-FEB-19
<b>WG2993488-6</b>	<b>LCS</b>							
Ammonia as N			103.8		%		85-115	21-FEB-19
<b>WG2993488-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-19
<b>WG2993488-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-FEB-19
<b>WG2993488-4</b>	<b>MS</b>	<b>L2232518-6</b>						
Ammonia as N			80.5		%		75-125	21-FEB-19
<b>WG2993488-8</b>	<b>MS</b>	<b>L2232518-3</b>						
Ammonia as N			88.3		%		75-125	21-FEB-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4511417</b>							
<b>WG2990387-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-FEB-19
<b>WG2990387-2</b>	<b>LCS</b>							
Nitrite (as N)			105.5		%		90-110	15-FEB-19
<b>WG2990387-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b> <b>Water</b>								
Batch	R4511417							
<b>WG2990387-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-FEB-19
<b>WG2990387-4</b>	<b>MS</b>	<b>L2232518-4</b>						
Nitrite (as N)			94.6		%		75-125	15-FEB-19
<b>NO3-L-IC-N-CL</b> <b>Water</b>								
Batch	R4511417							
<b>WG2990387-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Nitrate (as N)		<0.0050	0.0070	RPD-NA	mg/L	N/A	20	15-FEB-19
<b>WG2990387-2</b>	<b>LCS</b>							
Nitrate (as N)			100.6		%		90-110	15-FEB-19
<b>WG2990387-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-FEB-19
<b>WG2990387-4</b>	<b>MS</b>	<b>L2232518-4</b>						
Nitrate (as N)			90.4		%		75-125	15-FEB-19
<b>ORP-CL</b> <b>Water</b>								
Batch	R4517368							
<b>WG2992311-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	20-FEB-19
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4522031							
<b>WG2993819-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.1		%		80-120	22-FEB-19
<b>WG2993819-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-FEB-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4519458							
<b>WG2993088-3</b>	<b>DUP</b>	<b>L2232518-1</b>						
pH		7.63	7.64	J	pH	0.01	0.2	21-FEB-19
<b>WG2993088-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	21-FEB-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4510807							
<b>WG2989932-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	14-FEB-19
<b>WG2989932-17</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-FEB-19





## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4511417</b>							
<b>WG2990387-3</b>	<b>DUP</b>	<b>L2232518-4</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	15-FEB-19
<b>WG2990387-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.1		%		90-110	15-FEB-19
<b>WG2990387-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	15-FEB-19
<b>WG2990387-4</b>	<b>MS</b>	<b>L2232518-4</b>						
Sulfate (SO4)			90.1		%		75-125	15-FEB-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4521208</b>							
<b>WG2991685-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.2		%		85-115	20-FEB-19
<b>WG2991685-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-FEB-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4521987</b>							
<b>WG2992774-3</b>	<b>DUP</b>	<b>L2232518-6</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-FEB-19
<b>WG2992774-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.1		%		75-125	21-FEB-19
<b>WG2992774-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.4		%		75-125	21-FEB-19
<b>WG2992774-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.6		%		75-125	21-FEB-19
<b>WG2992774-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-FEB-19
<b>WG2992774-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-FEB-19
<b>WG2992774-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-FEB-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4518627</b>							
<b>WG2991724-4</b>	<b>LCS</b>							
Total Suspended Solids			95.4		%		85-115	20-FEB-19
<b>WG2991724-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-FEB-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4511067</b>							
<b>WG2990191-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	15-FEB-19
<b>WG2990191-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-FEB-19

# Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 12 of 13

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2232518

Report Date: 28-FEB-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	13-FEB-19 11:30	20-FEB-19 13:25	0.25	170	hours	EHTR-FM
	2	13-FEB-19 12:00	20-FEB-19 13:25	0.25	169	hours	EHTR-FM
	3	13-FEB-19 12:00	20-FEB-19 13:25	0.25	169	hours	EHTR-FM
	4	13-FEB-19 11:30	20-FEB-19 13:25	0.25	170	hours	EHTR-FM
	5	13-FEB-19 12:00	20-FEB-19 13:25	0.25	169	hours	EHTR-FM
	6	13-FEB-19 13:00	20-FEB-19 13:25	0.25	168	hours	EHTR-FM
pH							
	1	13-FEB-19 11:30	21-FEB-19 09:00	0.25	190	hours	EHTR-FM
	2	13-FEB-19 12:00	21-FEB-19 09:00	0.25	189	hours	EHTR-FM
	3	13-FEB-19 12:00	21-FEB-19 09:00	0.25	189	hours	EHTR-FM
	4	13-FEB-19 11:30	21-FEB-19 09:00	0.25	190	hours	EHTR-FM
	5	13-FEB-19 12:00	21-FEB-19 09:00	0.25	189	hours	EHTR-FM
	6	13-FEB-19 13:00	21-FEB-19 09:00	0.25	188	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

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

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2232518 were received on 14-FEB-19 09:30.

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

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

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

COC ID: 20190213-1420      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dylan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**

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



L2232518-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERVE	ANALYSIS REQUESTED															
									ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	N	N	N	N	N	F	F	F			
FR_09-04-A_QTR_2019-01-07_N	FR_09-04-A	WG		2019/02/13	11:30	G	5		NONE	NONE	NONE	NONE	H2SO4											
FR_09-04-B_QTR_2019-01-07_N	FR_09-04-B	WG		2019/02/13	12:00	G	5		NONE	NONE	NONE	NONE	H2SO4											
FR_DC2_QTR_2019-01-07_N	FR_DC2	WG		2019/02/13	12:00	G	5		NONE	NONE	NONE	NONE	H2SO4											
FR_FLD_QTR_2019-01-07_N	FR_FLD	WG		2019/02/13	11:30	G	5		NONE	NONE	NONE	NONE	H2SO4											
FR_TRP_QTR_2019-01-07_N	FR_TRP	WG		2019/02/13	12:00	G	2		NONE	NONE	NONE	NONE	H2SO4											
FR_IT43_QTR_2019-01-07_N	FR_IT43	WG		2019/02/13	13:00	G	5		NONE	NONE	NONE	NONE	H2SO4											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	2/19/19

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	<input checked="" type="checkbox"/>	<i>[Signature]</i>	Date/Time
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>		
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>		
For Emergency <1 Day, ASAP or Weekend - Contact ALS			Feb 13/2019



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 27-FEB-19  
Report Date: 06-MAR-19 17:09 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2237606  
Project P.O. #: VPO00617299  
Job Reference: TECK COAL  
C of C Numbers: 1  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2237606-1	L2237606-2	L2237606-3	L2237606-4	L2237606-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	26-FEB-19	26-FEB-19	26-FEB-19	25-FEB-19	25-FEB-19
		Sampled Time	12:50	12:55	12:45	13:25	13:00
		Client ID	FR_DC1_2019-02-26	FR_FLD_2019-02-26	FR_KB-3A_2019-02-26	FR_KB-3B_2019-02-25	FR_TRP_2019-02-26
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1760	<2.0	1770	1890	<2.0
	Hardness (as CaCO3) (mg/L)		1100	<0.50	1120	1260	
	pH (pH)		7.52	5.38	7.55	7.63	5.38
	ORP (mV)		453	447	449	424	409
	Total Suspended Solids (mg/L)		1.4	<1.0	<1.0	474	<1.0
	Total Dissolved Solids (mg/L)		1560	<10	1600	1780	<10
	Turbidity (NTU)		1.75	<0.10	1.22	639	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		19.2	2.0	16.5	28.4	1.6
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		365	<1.0	369	433	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		365	<1.0	369	433	<1.0
	Ammonia as N (mg/L)		0.0169	0.0187	0.0109	0.0647	0.0448 <sup>RRV</sup>
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050
	Chloride (Cl) (mg/L)		<2.5 <sup>DLHC</sup>	<0.50	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50
	Fluoride (F) (mg/L)		<0.10 <sup>DLHC</sup>	<0.020	<0.10 <sup>DLHC</sup>	0.12 <sup>DLHC</sup>	<0.020
	Ion Balance (%)		98.4	0.0	100	99.4	0.0
	Nitrate (as N) (mg/L)		63.5 <sup>DLHC</sup>	<0.0050	63.1 <sup>DLHC</sup>	72.9 <sup>DLHC</sup>	<0.0050
	Nitrite (as N) (mg/L)		0.0293 <sup>DLHC</sup>	<0.0010	0.0246 <sup>DLHC</sup>	0.206 <sup>DLHC</sup>	<0.0010
	Orthophosphate-Dissolved (as P) (mg/L)		0.0026	<0.0010	0.0025	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0030	<0.0020	0.0050	0.743 <sup>DLHC</sup>	<0.0020
	Sulfate (SO4) (mg/L)		516 <sup>DLHC</sup>	<0.30	512 <sup>DLHC</sup>	561 <sup>DLHC</sup>	<0.30
	Sulphide (as S) (mg/L)		<0.0015	<0.0015	<0.0015	0.0038	
	Sulphide (as H2S) (mg/L)		<0.0016	<0.0016	<0.0016	0.0040	
	Anion Sum (meq/L)		22.6	<0.10	22.6	25.6	<0.10
	Cation Sum (meq/L)		22.2	<0.10	22.7	25.4	<0.10
	Cation - Anion Balance (%)		-0.8	0.0	0.2	-0.3	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	<0.50	2.14	<0.50
	Total Organic Carbon (mg/L)		<0.50	<0.50	0.62	2.78 <sup>RRV</sup>	<0.50
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	0.0000051	0.0000164	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	0.0017	
	Antimony (Sb)-Dissolved (mg/L)		0.00011	<0.00010	<0.00010	0.00015	
	Arsenic (As)-Dissolved (mg/L)		0.00011	<0.00010	<0.00010	0.00012	
	Barium (Ba)-Dissolved (mg/L)		0.0615	<0.00010	0.0624	0.0763	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2237606-1 WG 26-FEB-19 12:50 FR_DC1_2019-02-26	L2237606-2 WG 26-FEB-19 12:55 FR_FLD_2019-02-26	L2237606-3 WG 26-FEB-19 12:45 FR_KB-3A_2019-02-26	L2237606-4 WG 25-FEB-19 13:25 FR_KB-3B_2019-02-25	L2237606-5 WG 25-FEB-19 13:00 FR_TRP_2019-02-26	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.016	<0.010	0.017	0.020	
	Cadmium (Cd)-Dissolved (ug/L)	0.0296	<0.0050	0.0273	0.0275	
	Calcium (Ca)-Dissolved (mg/L)	267	<0.050	272	289	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00014	<0.00010	0.00017	0.00013	
	Cobalt (Co)-Dissolved (ug/L)	2.55	<0.10	2.57	1.20	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0318	<0.0010	0.0345	0.0583	
	Magnesium (Mg)-Dissolved (mg/L)	105	<0.0050	107	130	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00232	<0.00010	0.00234	0.0155	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000319	<0.000050	0.000307	0.000700	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00055	
	Potassium (K)-Dissolved (mg/L)	2.24	<0.050	2.18	3.72	<0.050
	Selenium (Se)-Dissolved (ug/L)	233	<0.050	237	281	
	Silicon (Si)-Dissolved (mg/L)	3.18	<0.050	3.21	2.73	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	4.01	<0.050	4.13	4.90	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.296	<0.00020	0.311	0.281	
	Thallium (Tl)-Dissolved (mg/L)	0.000015	<0.000010	<0.000010	0.000014	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00499	<0.000010	0.00502	0.00725	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0017	<0.0010	

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



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			

## Reference Information

<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>SULPHIDE-CFA-ED</b>	Water	Sulphide	APHA 4500 -S E-Auto-Colorimetry
A continuous flow manifold adds HCl to the sample which converts sulphide to a gas, then the sulphide is separated from the flow using a gas dialysis membrane. A colorimetric reaction produces a methylene blue compound which is measured at 660 nm. This follows the Standard Methods procedure 4500 S-E.			
<b>SULPHIDE&gt;H2S-ED</b>	Water	Sulphide as Hydrogen Sulphide	Calculation from Sulphide
Calculated by multiplying Sulphide as S by the molar ratio of H2S to S (34/32): Sulphide (as H2S) = 1.063 * Sulphide (as S)			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			

## Reference Information

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

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

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

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

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

### Chain of Custody Numbers:

1

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4537728							
<b>WG2998244-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	01-MAR-19
<b>WG2998244-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	01-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-6</b>	<b>DUP</b>	<b>L2237606-5</b>						
Alkalinity, Total (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	01-MAR-19
<b>WG2998047-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.7		%		85-115	01-MAR-19
<b>WG2998047-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-MAR-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4537288							
<b>WG2998242-3</b>	<b>DUP</b>	<b>L2237606-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-MAR-19
<b>WG2998242-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.2		%		80-120	01-MAR-19
<b>WG2998242-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-10</b>	<b>LCS</b>							
Bromide (Br)			102.6		%		85-115	27-FEB-19
<b>WG2997153-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4545155							
<b>WG3000732-7</b>	<b>DUP</b>	<b>L2237606-5</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-MAR-19
<b>WG3000732-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.4		%		80-120	05-MAR-19
<b>WG3000732-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>WG3000732-8</b>	<b>MS</b>	<b>L2237606-5</b>						
Dissolved Organic Carbon			106.4		%		70-130	05-MAR-19



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4545187								
WG3000775-2 <b>LCS</b>								
Dissolved Organic Carbon			94.6		%		80-120	05-MAR-19
WG3000775-1 <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4545155								
WG3000732-7 <b>DUP</b>								
Total Organic Carbon		L2237606-5	<0.50	RPD-NA	mg/L	N/A	20	05-MAR-19
WG3000732-6 <b>LCS</b>								
Total Organic Carbon			106.1		%		80-120	05-MAR-19
WG3000732-5 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
WG3000732-8 <b>MS</b>								
Total Organic Carbon		L2237606-5	104.9		%		70-130	05-MAR-19
Batch      R4545187								
WG3000775-2 <b>LCS</b>								
Total Organic Carbon			98.9		%		80-120	05-MAR-19
WG3000775-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch      R4533248								
WG2997153-10 <b>LCS</b>								
Chloride (Cl)			99.4		%		90-110	27-FEB-19
WG2997153-9 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	27-FEB-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch      R4537868								
WG2998047-6 <b>DUP</b>								
Conductivity (@ 25C)		L2237606-5	<2.0	RPD-NA	uS/cm	N/A	10	01-MAR-19
WG2998047-5 <b>LCS</b>								
Conductivity (@ 25C)			96.7		%		90-110	01-MAR-19
WG2998047-4 <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-MAR-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4533248</b>							
<b>WG2997153-10</b>	<b>LCS</b>							
Fluoride (F)			100.0		%		90-110	27-FEB-19
<b>WG2997153-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-FEB-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4546607</b>							
<b>WG3001206-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.0		%		80-120	06-MAR-19
<b>WG3001206-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-MAR-19
<b>HG-T-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4546607</b>							
<b>WG3001207-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			108.0		%		80-120	06-MAR-19
<b>WG3001207-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	06-MAR-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4537288</b>							
<b>WG2998242-3</b>	<b>DUP</b>	<b>L2237606-1</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-19
Antimony (Sb)-Dissolved		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-19
Arsenic (As)-Dissolved		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-19
Barium (Ba)-Dissolved		0.0615	0.0648		mg/L	5.2	20	01-MAR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-MAR-19
Boron (B)-Dissolved		0.016	0.017		mg/L	3.9	20	01-MAR-19
Cadmium (Cd)-Dissolved		0.0000296	0.0000275		mg/L	7.2	20	01-MAR-19
Calcium (Ca)-Dissolved		267	275		mg/L	3.1	20	01-MAR-19
Chromium (Cr)-Dissolved		0.00014	0.00014		mg/L	2.9	20	01-MAR-19
Cobalt (Co)-Dissolved		0.00255	0.00255		mg/L	0.0	20	01-MAR-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-MAR-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-MAR-19
Lithium (Li)-Dissolved		0.0318	0.0344		mg/L	7.8	20	01-MAR-19
Magnesium (Mg)-Dissolved		105	106		mg/L	0.6	20	01-MAR-19
Manganese (Mn)-Dissolved		0.00232	0.00227		mg/L	1.9	20	01-MAR-19
Molybdenum (Mo)-Dissolved		0.000319	0.000308		mg/L	3.7	20	01-MAR-19



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537288</b>							
<b>WG2998242-3</b>	<b>DUP</b>	<b>L2237606-1</b>						
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-MAR-19
Potassium (K)-Dissolved		2.24	2.24		mg/L	0.1	20	01-MAR-19
Selenium (Se)-Dissolved		0.233	0.236		mg/L	1.2	20	01-MAR-19
Silicon (Si)-Dissolved		3.18	3.26		mg/L	2.7	20	01-MAR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-MAR-19
Sodium (Na)-Dissolved		4.01	4.00		mg/L	0.2	20	01-MAR-19
Strontium (Sr)-Dissolved		0.296	0.310		mg/L	4.9	20	01-MAR-19
Thallium (Tl)-Dissolved		0.000015	<0.000010	RPD-NA	mg/L	N/A	20	01-MAR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-MAR-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-MAR-19
Uranium (U)-Dissolved		0.00499	0.00506		mg/L	1.3	20	01-MAR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-MAR-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-MAR-19
<b>WG2998242-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.8		%		80-120	01-MAR-19
Antimony (Sb)-Dissolved			107.0		%		80-120	01-MAR-19
Arsenic (As)-Dissolved			105.3		%		80-120	01-MAR-19
Barium (Ba)-Dissolved			107.1		%		80-120	01-MAR-19
Bismuth (Bi)-Dissolved			95.6		%		80-120	01-MAR-19
Boron (B)-Dissolved			109.1		%		80-120	01-MAR-19
Cadmium (Cd)-Dissolved			109.4		%		80-120	01-MAR-19
Calcium (Ca)-Dissolved			103.5		%		80-120	01-MAR-19
Chromium (Cr)-Dissolved			108.2		%		80-120	01-MAR-19
Cobalt (Co)-Dissolved			101.6		%		80-120	01-MAR-19
Copper (Cu)-Dissolved			104.0		%		80-120	01-MAR-19
Iron (Fe)-Dissolved			108.7		%		80-120	01-MAR-19
Lead (Pb)-Dissolved			101.5		%		80-120	01-MAR-19
Lithium (Li)-Dissolved			100.5		%		80-120	01-MAR-19
Magnesium (Mg)-Dissolved			101.1		%		80-120	01-MAR-19
Manganese (Mn)-Dissolved			106.6		%		80-120	01-MAR-19
Molybdenum (Mo)-Dissolved			101.4		%		80-120	01-MAR-19
Nickel (Ni)-Dissolved			106.9		%		80-120	01-MAR-19
Potassium (K)-Dissolved			112.5		%		80-120	01-MAR-19
Selenium (Se)-Dissolved			102.3		%		80-120	01-MAR-19



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537288</b>							
<b>WG2998242-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silicon (Si)-Dissolved			109.8		%		60-140	01-MAR-19
Silver (Ag)-Dissolved			104.6		%		80-120	01-MAR-19
Sodium (Na)-Dissolved			109.0		%		80-120	01-MAR-19
Strontium (Sr)-Dissolved			105.1		%		80-120	01-MAR-19
Thallium (Tl)-Dissolved			104.7		%		80-120	01-MAR-19
Tin (Sn)-Dissolved			107.1		%		80-120	01-MAR-19
Titanium (Ti)-Dissolved			103.3		%		80-120	01-MAR-19
Uranium (U)-Dissolved			101.1		%		80-120	01-MAR-19
Vanadium (V)-Dissolved			107.7		%		80-120	01-MAR-19
Zinc (Zn)-Dissolved			105.7		%		80-120	01-MAR-19
<b>WG2998242-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-MAR-19





## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537288</b>							
<b>WG2998242-1</b>	<b>MB</b>							
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
<b>WG2998242-4</b>	<b>MS</b>	<b>L2237606-5</b>						
Calcium (Ca)-Dissolved			98.4		%		70-130	01-MAR-19
Magnesium (Mg)-Dissolved			101.4		%		70-130	01-MAR-19
Potassium (K)-Dissolved			105.7		%		70-130	01-MAR-19
Sodium (Na)-Dissolved			103.0		%		70-130	01-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4543991</b>							
<b>WG2999926-3</b>	<b>DUP</b>	<b>L2237606-5</b>						
Ammonia as N		0.0448	0.0449		mg/L	0.2	20	04-MAR-19
<b>WG2999926-2</b>	<b>LCS</b>							
Ammonia as N			105.2		%		85-115	04-MAR-19
<b>WG2999926-6</b>	<b>LCS</b>							
Ammonia as N			105.8		%		85-115	04-MAR-19
<b>WG2999926-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-19
<b>WG2999926-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-19
<b>WG2999926-4</b>	<b>MS</b>	<b>L2237606-5</b>						
Ammonia as N			106.1		%		75-125	04-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533248</b>							
<b>WG2997153-10</b>	<b>LCS</b>							
Nitrite (as N)			104.8		%		90-110	27-FEB-19
<b>WG2997153-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-FEB-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-10</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	27-FEB-19
<b>WG2997153-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-FEB-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4541135							
<b>WG2999490-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	04-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4540732							
<b>WG2999455-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.8		%		80-120	04-MAR-19
<b>WG2999455-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-6</b>	<b>DUP</b>	<b>L2237606-5</b>						
pH		5.38	5.33	J	pH	0.05	0.2	01-MAR-19
<b>WG2998047-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	01-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4531788							
<b>WG2996621-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.9		%		80-120	27-FEB-19
<b>WG2996621-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-FEB-19
<b>WG2996621-12</b>	<b>MS</b>	<b>L2237606-4</b>						
Orthophosphate-Dissolved (as P)			98.6		%		70-130	27-FEB-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-10</b>	<b>LCS</b>							
Sulfate (SO4)			98.8		%		90-110	27-FEB-19
<b>WG2997153-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4547029</b>							
<b>WG2999403-6</b>	<b>DUP</b>	<b>L2237606-1</b>						
Total Dissolved Solids		1560	1590		mg/L	2.0	20	04-MAR-19
<b>WG2999403-9</b>	<b>DUP</b>	<b>L2237606-4</b>						
Total Dissolved Solids		1780	1780		mg/L	0.1	20	04-MAR-19
<b>WG2999403-5</b>	<b>LCS</b>							
Total Dissolved Solids			102.1		%		85-115	04-MAR-19
<b>WG2999403-8</b>	<b>LCS</b>							
Total Dissolved Solids			104.1		%		85-115	04-MAR-19
<b>WG2999403-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-MAR-19
<b>WG2999403-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-MAR-19
<b>SULPHIDE-CFA-ED</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537949</b>							
<b>WG2998174-6</b>	<b>LCS</b>							
Sulphide (as S)			91.5		%		75-125	01-MAR-19
<b>WG2998174-5</b>	<b>MB</b>							
Sulphide (as S)			<0.0015		mg/L		0.0015	01-MAR-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4547127</b>							
<b>WG2999335-2</b>	<b>LCS</b>							
Total Suspended Solids			86.2		%		85-115	04-MAR-19
<b>WG2999335-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	04-MAR-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532950</b>							
<b>WG2996765-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	27-FEB-19
<b>WG2996765-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-FEB-19

# Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 9 of 10

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2237606

Report Date: 06-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	26-FEB-19 12:50	04-MAR-19 12:00	0.25	143	hours	EHTR-FM
	2	26-FEB-19 12:55	04-MAR-19 12:00	0.25	143	hours	EHTR-FM
	3	26-FEB-19 12:45	04-MAR-19 12:00	0.25	143	hours	EHTR-FM
	4	25-FEB-19 13:25	04-MAR-19 12:00	0.25	167	hours	EHTR-FM
	5	25-FEB-19 13:00	04-MAR-19 12:00	0.25	167	hours	EHTR-FM
pH							
	1	26-FEB-19 12:50	01-MAR-19 09:00	0.25	68	hours	EHTR-FM
	2	26-FEB-19 12:55	01-MAR-19 09:00	0.25	68	hours	EHTR-FM
	3	26-FEB-19 12:45	01-MAR-19 09:00	0.25	68	hours	EHTR-FM
	4	25-FEB-19 13:25	01-MAR-19 09:00	0.25	92	hours	EHTR-FM
	5	25-FEB-19 13:00	01-MAR-19 09:00	0.25	92	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

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

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2237606 were received on 27-FEB-19 09:00.

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

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

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

COC ID: **1**      TURNAROUND TIME: Regular      RUSH:

PRODUCT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:			
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:			
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00617299		

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC	ALS_Package-Sulfide-T	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered: F, Field; L, Lab; FL, Field & Lab; N, None		
FR_DC1_2019-02-26	FR_DC1	WG	N	2/26/2019	12:50	G	7	1	1	1	1	1	1	1	N		
FR_FLD_2019-02-26	FR_FLD	WG	N	2/26/2019	12:55	G	7	1	1	1	1	1	1	1			
FR_KB-3A_2019-02-26	FR_KB-3A	WG	N	2/26/2019	12:45	G	7	1	1	1	1	1	1	1			
FR_KB-3B_2019-02-25	FR_KB-3B	WG	N	2/25/2019	13:25	G	7	1	1	1	1	1	1	1			
FR_TRP_2019-02-26	FR_TRP	WG	N	2/26/2019	13:00	G	4	1	1	1				1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	2019/02/27 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Sampler's Name	Tyler Fortin	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time
Emergency (1 Business Day) - 100% surcharge			February 26, 2019
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

*60*



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 01-MAR-19  
Report Date: 29-MAR-19 12:52 (MT)  
Version: FINAL REV. 2

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2238699  
Project P.O. #: VPO00617299  
Job Reference: TECK COAL  
C of C Numbers: 3  
Legal Site Desc:

Comments: ADDITIONAL 26-MAR-19 14:24

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2238699-1 WG 28-FEB-19 11:30 FR_KB-1_2019-02-28	L2238699-2 WG 28-FEB-19 13:05 FR_KB-2_2019-02-28		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2490	2420		
	Hardness (as CaCO3) (mg/L)	1630	1550		
	pH (pH)	7.85	7.64		
	ORP (mV)	394	421		
	Total Suspended Solids (mg/L)	3.3	960		
	Total Dissolved Solids (mg/L)	2120	2100		
	Turbidity (NTU)	0.43	983		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	15.8	29.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	394	418		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	394	418		
	Ammonia as N (mg/L)	<0.0050	0.0149		
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)	0.16 <sup>DLHC</sup>	0.15 <sup>DLHC</sup>		
	Ion Balance (%)	105	102		
	Nitrate (as N) (mg/L)	97.5 <sup>DLHC</sup>	95.2 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	1.97 <sup>TKNI</sup>		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0023	0.0020		
	Phosphorus (P)-Total (mg/L)	0.0050	1.47 <sup>DLHC</sup>		
	Sulfate (SO4) (mg/L)	790 <sup>DLHC</sup>	745 <sup>DLHC</sup>		
	Sulphide (as S) (mg/L)	<0.0015	<0.0060 <sup>DLM</sup>		
	Sulphide (as H2S) (mg/L)	<0.0016	<0.0064		
	Anion Sum (meq/L)	31.3	30.7		
	Cation Sum (meq/L)	33.0	31.3		
	Cation - Anion Balance (%)	2.6	1.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.52	0.83		
	Total Organic Carbon (mg/L)	1.31	2.37		
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	0.0000051 <sup>RRV</sup>	0.0000062 <sup>RRV</sup>		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0190 <sup>DLDS</sup>		
	Antimony (Sb)-Dissolved (mg/L)	0.00041	<0.00050 <sup>DLDS</sup>		
	Arsenic (As)-Dissolved (mg/L)	0.00014	<0.00050 <sup>DLDS</sup>		

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



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2238699-1 WG 28-FEB-19 11:30 FR_KB-1_2019-02-28	L2238699-2 WG 28-FEB-19 13:05 FR_KB-2_2019-02-28		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0508	0.0486 <sup>DLDS</sup>		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.10 <sup>DLDS</sup>		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLDS</sup>		
	Boron (B)-Dissolved (mg/L)	0.025	0.064 <sup>DLDS</sup>		
	Cadmium (Cd)-Dissolved (ug/L)	0.547	0.521 <sup>DLDS</sup>		
	Calcium (Ca)-Dissolved (mg/L)	364 <sup>RRV</sup>	349 <sup>DLDS</sup>		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>		
	Cobalt (Co)-Dissolved (ug/L)	3.53	3.51 <sup>DLDS</sup>		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.0010 <sup>DLDS</sup>		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.050 <sup>DLDS</sup>		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00025 <sup>DLDS</sup>		
	Lithium (Li)-Dissolved (mg/L)	0.103	0.0938 <sup>DLDS</sup>		
	Magnesium (Mg)-Dissolved (mg/L)	176	165 <sup>DLDS</sup>		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050 <sup>DLDS</sup>		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00141	0.00138 <sup>DLDS</sup>		
	Nickel (Ni)-Dissolved (mg/L)	0.0200	0.0201 <sup>DLDS</sup>		
	Potassium (K)-Dissolved (mg/L)	4.97	4.99 <sup>DLDS</sup>		
	Selenium (Se)-Dissolved (ug/L)	378	273 <sup>DLDS</sup>		
	Silicon (Si)-Dissolved (mg/L)	2.35	2.22 <sup>DLDS</sup>		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000050 <sup>DLDS</sup>		
	Sodium (Na)-Dissolved (mg/L)	4.59	4.30 <sup>DLDS</sup>		
	Strontium (Sr)-Dissolved (mg/L)	0.308	0.296 <sup>DLDS</sup>		
	Thallium (Tl)-Dissolved (mg/L)	0.000016	<0.000050 <sup>DLDS</sup>		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00050 <sup>DLDS</sup>		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010 <sup>DLDS</sup>		
	Uranium (U)-Dissolved (mg/L)	0.0129	0.0134 <sup>DLDS</sup>		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0025 <sup>DLDS</sup>		
	Zinc (Zn)-Dissolved (mg/L)	0.0100	0.0129 <sup>DLDS</sup>		

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>SULPHIDE-CFA-ED</b>	Water	Sulphide	APHA 4500 -S E-Auto-Colorimetry
A continuous flow manifold adds HCl to the sample which converts sulphide to a gas, then the sulphide is separated from the flow using a gas dialysis membrane. A colorimetric reaction produces a methylene blue compound which is measured at 660 nm. This follows the Standard Methods procedure 4500 S-E.			
<b>SULPHIDE&gt;H2S-ED</b>	Water	Sulphide as Hydrogen Sulphide	Calculation from Sulphide
Calculated by multiplying Sulphide as S by the molar ratio of H2S to S (34/32): Sulphide (as H2S) = 1.063 * Sulphide (as S)			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

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

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

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

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

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

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

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

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

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

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

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

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

**Chain of Custody Numbers:**

3

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4548711							
<b>WG3001736-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	06-MAR-19
<b>WG3001736-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	06-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4546428							
<b>WG3001123-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.4		%		85-115	06-MAR-19
<b>WG3001123-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-MAR-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4549871							
<b>WG3001982-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			101.5		%		80-120	07-MAR-19
<b>WG3001982-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4538934							
<b>WG2998871-6</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	02-MAR-19
<b>WG2998871-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	02-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4551227							
<b>WG3002391-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.3		%		80-120	07-MAR-19
<b>WG3002391-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
Batch	R4551329							
<b>WG3002410-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.0		%		80-120	07-MAR-19
<b>WG3002410-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch	R4551227							
<b>WG3002391-2</b>	<b>LCS</b>							
Total Organic Carbon			95.3		%		80-120	07-MAR-19
<b>WG3002391-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
Batch	R4551329							
<b>WG3002410-2</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	07-MAR-19
<b>WG3002410-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch	R4538934							
<b>WG2998871-6</b>	<b>LCS</b>							
Chloride (Cl)			103.5		%		90-110	02-MAR-19
<b>WG2998871-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	02-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4546428							
<b>WG3001123-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.6		%		90-110	06-MAR-19
<b>WG3001123-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-MAR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4538934							
<b>WG2998871-6</b>	<b>LCS</b>							
Fluoride (F)			103.0		%		90-110	02-MAR-19
<b>WG2998871-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	02-MAR-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch	R4550071							
<b>WG3002037-3</b>	<b>DUP</b>	<b>L2238699-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-MAR-19
<b>WG3002037-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	07-MAR-19
<b>WG3002037-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	07-MAR-19
<b>WG3002037-4</b>	<b>MS</b>	<b>L2238699-2</b>						
Mercury (Hg)-Dissolved			102.0		%		70-130	07-MAR-19



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4550071</b>							
<b>WG3002038-6</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.2		%		80-120	07-MAR-19
<b>WG3002038-5</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	07-MAR-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4549871</b>							
<b>WG3001982-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.1		%		80-120	07-MAR-19
Antimony (Sb)-Dissolved			98.0		%		80-120	07-MAR-19
Arsenic (As)-Dissolved			98.5		%		80-120	07-MAR-19
Barium (Ba)-Dissolved			97.6		%		80-120	07-MAR-19
Bismuth (Bi)-Dissolved			101.6		%		80-120	07-MAR-19
Boron (B)-Dissolved			96.7		%		80-120	07-MAR-19
Cadmium (Cd)-Dissolved			95.9		%		80-120	07-MAR-19
Calcium (Ca)-Dissolved			97.3		%		80-120	07-MAR-19
Chromium (Cr)-Dissolved			99.8		%		80-120	07-MAR-19
Cobalt (Co)-Dissolved			96.9		%		80-120	07-MAR-19
Copper (Cu)-Dissolved			94.8		%		80-120	07-MAR-19
Iron (Fe)-Dissolved			103.4		%		80-120	07-MAR-19
Lead (Pb)-Dissolved			97.1		%		80-120	07-MAR-19
Lithium (Li)-Dissolved			101.4		%		80-120	07-MAR-19
Magnesium (Mg)-Dissolved			100.5		%		80-120	07-MAR-19
Manganese (Mn)-Dissolved			100.0		%		80-120	07-MAR-19
Molybdenum (Mo)-Dissolved			102.0		%		80-120	07-MAR-19
Nickel (Ni)-Dissolved			97.9		%		80-120	07-MAR-19
Potassium (K)-Dissolved			104.2		%		80-120	07-MAR-19
Selenium (Se)-Dissolved			93.6		%		80-120	07-MAR-19
Silicon (Si)-Dissolved			103.3		%		60-140	07-MAR-19
Silver (Ag)-Dissolved			105.0		%		80-120	07-MAR-19
Sodium (Na)-Dissolved			94.8		%		80-120	07-MAR-19
Strontium (Sr)-Dissolved			102.0		%		80-120	07-MAR-19
Thallium (Tl)-Dissolved			97.9		%		80-120	07-MAR-19
Tin (Sn)-Dissolved			99.1		%		80-120	07-MAR-19
Titanium (Ti)-Dissolved			97.8		%		80-120	07-MAR-19
Uranium (U)-Dissolved			100.2		%		80-120	07-MAR-19



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4549871</b>							
<b>WG3001982-2</b>	<b>LCS</b>	<b>TMRM</b>						
Vanadium (V)-Dissolved			101.1		%		80-120	07-MAR-19
Zinc (Zn)-Dissolved			98.7		%		80-120	07-MAR-19
<b>WG3001982-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19

**NH3-L-F-CL**

**Water**





## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4548567							
WG3001693-6	LCS							
Ammonia as N			98.6		%		85-115	06-MAR-19
WG3001693-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	06-MAR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4538934							
WG2998871-6	LCS							
Nitrite (as N)			108.5		%		90-110	02-MAR-19
WG2998871-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	02-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4538934							
WG2998871-6	LCS							
Nitrate (as N)			104.4		%		90-110	02-MAR-19
WG2998871-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	02-MAR-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4547308							
WG3001337-1	CRM	CL-ORP						
ORP			219		mV		210-230	06-MAR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4545749							
WG3000917-8	LCS							
Phosphorus (P)-Total			107.2		%		80-120	06-MAR-19
WG3000917-7	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-MAR-19
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4546428							
WG3001123-11	LCS							
pH			7.03		pH		6.9-7.1	06-MAR-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4537350							
WG2998128-14	LCS							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	01-MAR-19
WG2998128-13	MB							



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4537350							
<b>WG2998128-13 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4538934							
<b>WG2998871-6 LCS</b>								
Sulfate (SO4)			103.6		%		90-110	02-MAR-19
<b>WG2998871-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	02-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4552875							
<b>WG3002081-2 LCS</b>								
Total Dissolved Solids			99.0		%		85-115	07-MAR-19
<b>WG3002081-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	07-MAR-19
<b>SULPHIDE-CFA-ED</b>	<b>Water</b>							
Batch	R4538591							
<b>WG2998680-2 LCS</b>								
Sulphide (as S)			110.7		%		75-125	02-MAR-19
<b>WG2998680-6 LCS</b>								
Sulphide (as S)			96.8		%		75-125	02-MAR-19
<b>WG2998680-1 MB</b>								
Sulphide (as S)			<0.0015		mg/L		0.0015	02-MAR-19
<b>WG2998680-5 MB</b>								
Sulphide (as S)			<0.0015		mg/L		0.0015	02-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4586513							
<b>WG3016508-2 LCS</b>								
Total Kjeldahl Nitrogen			93.7		%		75-125	27-MAR-19
<b>WG3016508-6 LCS</b>								
Total Kjeldahl Nitrogen			93.3		%		75-125	27-MAR-19
<b>WG3016508-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAR-19
<b>WG3016508-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4552770							
<b>WG3002122-2</b>	<b>LCS</b>							
Total Suspended Solids			96.6		%		85-115	07-MAR-19
<b>WG3002122-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	07-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4538030							
<b>WG2998435-5</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	01-MAR-19
<b>WG2998435-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-MAR-19

# Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 8 of 9

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2238699

Report Date: 29-MAR-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	28-FEB-19 11:30	06-MAR-19 10:00	0.25	143	hours	EHTR-FM
	2	28-FEB-19 13:05	06-MAR-19 10:00	0.25	141	hours	EHTR-FM
pH	1	28-FEB-19 11:30	06-MAR-19 10:00	0.25	143	hours	EHTR-FM
	2	28-FEB-19 13:05	06-MAR-19 10:00	0.25	141	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2238699 were received on 01-MAR-19 08:40.

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

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

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

COC ID:

3

TURNAROUND TIME:

Regular

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:			
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:			
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00617299		

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

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

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOC	ALS_Package-Sulfide-T	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL				
FR_KB-1_2019-02-28	FR_KB-1	WG	N	2/28/2019	11:30	G	7	1	1	1	1	1	1	1				
FR_KB-2_2019-02-28	FR_KB-2	WG	N	2/28/2019	13:05	G	7	1	1	1	1	1	1	1				



L2238699-COFC

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	3/1/2019

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	<b>Sampler's Name</b>	Tyler Fortin	<b>Mobile #</b>	
Priority (2-3 business days) - 50% surcharge		<b>Sampler's Signature</b>	<i>[Signature]</i>	<b>Date/Time</b>	February 28, 2019
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



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

Date Received: 12-MAR-19  
Report Date: 19-MAR-19 16:38 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2242795  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190311-1512  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2242795-1	L2242795-2	L2242795-3		
		Description	WG	WG	WG		
		Sampled Date	11-MAR-19	11-MAR-19	11-MAR-19		
		Sampled Time	13:00	13:53	13:00		
		Client ID	FR_DC1_QTR_201 9-01-07_N	FR_HMW2_QTR_2 019-01-07_N	FR_HMW3_QTR_2 019-01-07_N		
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		890	3350	878		
	Hardness (as CaCO3) (mg/L)		479	2330	482		
	pH (pH)		7.59	7.17	7.70		
	ORP (mV)		358	376	335		
	Total Suspended Solids (mg/L)		2.4	18.7	1.6		
	Total Dissolved Solids (mg/L)		673 <sup>DLHC</sup>	3360 <sup>DLHC</sup>	630 <sup>DLHC</sup>		
	Turbidity (NTU)		2.82	19.4	3.61		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		3.3	19.8	4.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		191	410	186		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		191	410	186		
	Ammonia as N (mg/L)		0.186	0.109	0.207		
	Bromide (Br) (mg/L)		<0.050	<0.25 <sup>DLHC</sup>	<0.050		
	Chloride (Cl) (mg/L)		0.54	<2.5 <sup>DLHC</sup>	0.54		
	Fluoride (F) (mg/L)		0.289	0.11 <sup>DLHC</sup>	0.290		
	Ion Balance (%)		96.0	96.5	97.4		
	Nitrate (as N) (mg/L)		9.08	73.3 <sup>DLHC</sup>	9.13		
	Nitrite (as N) (mg/L)		0.0068	0.0127 <sup>DLHC</sup>	0.0073		
	Total Kjeldahl Nitrogen (mg/L)		0.280 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.098 <sup>TKNI</sup>		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0010	0.0086	<0.0010		
	Phosphorus (P)-Total (mg/L)		0.0032	0.0139	0.0037		
	Sulfate (SO4) (mg/L)		270	1690 <sup>DLHC</sup>	270		
	Anion Sum (meq/L)		10.1	48.5	10.0		
	Cation Sum (meq/L)		9.70	46.8	9.76		
	Cation - Anion Balance (%)		-2.0	-1.8	-1.3		
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	0.70	<0.50	
Total Organic Carbon (mg/L)			<0.50	1.13	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.010 <sup>DLA</sup>		
	Antimony (Sb)-Dissolved (mg/L)		0.00017	<0.00020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>		
	Arsenic (As)-Dissolved (mg/L)		0.00017	<0.00020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>		
	Barium (Ba)-Dissolved (mg/L)		0.0320	0.0123	0.0319		
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.040 <sup>DLA</sup>	<0.20 <sup>DLA</sup>		
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.00010 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>		

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2242795-1	L2242795-2	L2242795-3
		Description	WG	WG	WG
		Sampled Date	11-MAR-19	11-MAR-19	11-MAR-19
		Sampled Time	13:00	13:53	13:00
		Client ID	FR_DC1_QTR_201 9-01-07_N	FR_HMW2_QTR_2 019-01-07_N	FR_HMW3_QTR_2 019-01-07_N
Grouping	Analyte				
<b>WATER</b>					
Dissolved Metals	Boron (B)-Dissolved (mg/L)	0.017	0.054	<0.10 <sup>DLA</sup>	
	Cadmium (Cd)-Dissolved (ug/L)	0.0289	0.280	0.052	
	Calcium (Ca)-Dissolved (mg/L)	114	491	115	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	
	Cobalt (Co)-Dissolved (ug/L)	0.22	0.22	<1.0 <sup>DLA</sup>	
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0020 <sup>DLA</sup>	
	Iron (Fe)-Dissolved (mg/L)	0.268	<0.020 <sup>DLA</sup>	0.27	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.00050 <sup>DLA</sup>	
	Lithium (Li)-Dissolved (mg/L)	0.0271	0.138	0.027	
	Magnesium (Mg)-Dissolved (mg/L)	47.0	268	47.1	
	Manganese (Mn)-Dissolved (mg/L)	0.116	0.115	0.116	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00104	0.00053	0.00094	
	Nickel (Ni)-Dissolved (mg/L)	0.00133	0.0160	<0.0050 <sup>DLA</sup>	
	Potassium (K)-Dissolved (mg/L)	1.82	7.07	1.72	
	Selenium (Se)-Dissolved (ug/L)	71.3	522	62.3	
	Silicon (Si)-Dissolved (mg/L)	1.35	1.83	1.10	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	
	Sodium (Na)-Dissolved (mg/L)	1.50	2.26	1.61	
	Strontium (Sr)-Dissolved (mg/L)	0.130	0.285	0.126	
	Thallium (Tl)-Dissolved (mg/L)	0.000010	0.000064 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>		
Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		
Uranium (U)-Dissolved (mg/L)	0.00203	0.0103	0.00201		
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>		
Zinc (Zn)-Dissolved (mg/L)	0.0011	0.0082	<0.010 <sup>DLA</sup>		

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2242795-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2242795-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2242795-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2242795-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2242795-1, -2, -3

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

## Reference Information

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

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

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

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

### Chain of Custody Numbers:

20190311-1512

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L* - milligrams per litre.

*<* - Less than.

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

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

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

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

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



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 1 of 11

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4568116							
<b>WG3007873-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.2		%		85-115	16-MAR-19
<b>WG3007873-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	16-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-9</b>	<b>DUP</b>	<b>L2242795-3</b>						
Alkalinity, Total (as CaCO3)		186	187		mg/L	0.5	20	16-MAR-19
<b>WG3007872-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	16-MAR-19
<b>WG3007872-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4567526							
<b>WG3007336-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	15-MAR-19
<b>WG3007336-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4564229							
<b>WG3006422-11</b>	<b>LCS</b>							
Bromide (Br)			101.9		%		85-115	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Bromide (Br)			100.9		%		85-115	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Bromide (Br)			102.6		%		85-115	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570242</b>							
<b>WG3009104-5</b>	<b>DUP</b>	<b>L2242795-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	18-MAR-19
<b>WG3009104-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.9		%		80-120	18-MAR-19
<b>WG3009104-12</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.6		%		80-120	18-MAR-19
<b>WG3009104-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.4		%		80-120	18-MAR-19
<b>WG3009104-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-11</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-6</b>	<b>MS</b>	<b>L2242795-2</b>						
Dissolved Organic Carbon			100.2		%		70-130	18-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570242</b>							
<b>WG3009104-5</b>	<b>DUP</b>	<b>L2242795-1</b>						
Total Organic Carbon		<0.50	0.53	RPD-NA	mg/L	N/A	20	18-MAR-19
<b>WG3009104-10</b>	<b>LCS</b>							
Total Organic Carbon			97.3		%		80-120	18-MAR-19
<b>WG3009104-12</b>	<b>LCS</b>							
Total Organic Carbon			96.2		%		80-120	18-MAR-19
<b>WG3009104-2</b>	<b>LCS</b>							
Total Organic Carbon			101.2		%		80-120	18-MAR-19
<b>WG3009104-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-11</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>WG3009104-6</b>	<b>MS</b>	<b>L2242795-2</b>						
Total Organic Carbon			102.4		%		70-130	18-MAR-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Chloride (Cl)			100.1		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Chloride (Cl)			99.0		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4568113</b>							
<b>WG3007872-9</b>	<b>DUP</b>	<b>L2242795-3</b>						
Conductivity (@ 25C)		878	866		uS/cm	1.4	10	16-MAR-19
<b>WG3007872-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	16-MAR-19
<b>WG3007872-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-MAR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Fluoride (F)			100.6		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Fluoride (F)			99.2		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Fluoride (F)			100.0		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Fluoride (F)			101.0		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-4</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4568601</b>							
<b>WG3007203-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-MAR-19
<b>Batch</b>	<b>R4569748</b>							
<b>WG3007203-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.2		%		80-120	18-MAR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4567526</b>							
<b>WG3007336-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.2		%		80-120	15-MAR-19
Antimony (Sb)-Dissolved			104.2		%		80-120	15-MAR-19
Arsenic (As)-Dissolved			99.9		%		80-120	15-MAR-19
Barium (Ba)-Dissolved			101.6		%		80-120	15-MAR-19
Bismuth (Bi)-Dissolved			101.6		%		80-120	15-MAR-19
Boron (B)-Dissolved			95.3		%		80-120	15-MAR-19
Cadmium (Cd)-Dissolved			95.1		%		80-120	15-MAR-19
Calcium (Ca)-Dissolved			98.0		%		80-120	15-MAR-19
Chromium (Cr)-Dissolved			95.7		%		80-120	15-MAR-19
Cobalt (Co)-Dissolved			97.0		%		80-120	15-MAR-19
Copper (Cu)-Dissolved			98.7		%		80-120	15-MAR-19
Iron (Fe)-Dissolved			91.0		%		80-120	15-MAR-19
Lead (Pb)-Dissolved			108.4		%		80-120	15-MAR-19
Lithium (Li)-Dissolved			93.4		%		80-120	15-MAR-19
Magnesium (Mg)-Dissolved			93.6		%		80-120	15-MAR-19
Manganese (Mn)-Dissolved			96.5		%		80-120	15-MAR-19
Molybdenum (Mo)-Dissolved			106.0		%		80-120	15-MAR-19
Nickel (Ni)-Dissolved			97.7		%		80-120	15-MAR-19
Potassium (K)-Dissolved			93.2		%		80-120	15-MAR-19
Selenium (Se)-Dissolved			97.7		%		80-120	15-MAR-19





## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4567526</b>							
<b>WG3007336-2</b>	<b>LCS</b>							
Silicon (Si)-Dissolved			95.1		%		60-140	15-MAR-19
Silver (Ag)-Dissolved			103.2		%		80-120	15-MAR-19
Sodium (Na)-Dissolved			98.6		%		80-120	15-MAR-19
Strontium (Sr)-Dissolved			99.9		%		80-120	15-MAR-19
Thallium (Tl)-Dissolved			108.4		%		80-120	15-MAR-19
Tin (Sn)-Dissolved			102.5		%		80-120	15-MAR-19
Titanium (Ti)-Dissolved			92.5		%		80-120	15-MAR-19
Uranium (U)-Dissolved			104.4		%		80-120	15-MAR-19
Vanadium (V)-Dissolved			97.0		%		80-120	15-MAR-19
Zinc (Zn)-Dissolved			100.2		%		80-120	15-MAR-19
<b>WG3007336-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAR-19



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4567526</b>							
<b>WG3007336-1</b>	<b>MB</b>	<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570240</b>							
<b>WG3009151-6</b>	<b>LCS</b>							
Ammonia as N			106.0		%		85-115	18-MAR-19
<b>WG3009151-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Nitrite (as N)			101.0		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Nitrite (as N)			100.2		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4564229							
<b>WG3006422-2</b>	<b>LCS</b>							
Nitrate (as N)			98.8		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Nitrate (as N)			98.9		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Nitrate (as N)			99.4		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4567889							
<b>WG3007665-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	15-MAR-19
<b>WG3007665-10</b>	<b>DUP</b>	<b>L2242795-3</b>						
ORP		335	336	J	mV	0.9	15	15-MAR-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4565831							
<b>WG3006780-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.8		%		80-120	14-MAR-19
<b>WG3006780-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-MAR-19
<b>PH-CL</b>		<b>Water</b>						
Batch	R4568113							
<b>WG3007872-9</b>	<b>DUP</b>	<b>L2242795-3</b>						
pH		7.70	7.70	J	pH	0.00	0.2	16-MAR-19
<b>WG3007872-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	16-MAR-19
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4564447							
<b>WG3005680-8</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	13-MAR-19
<b>WG3005680-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4564447							
<b>WG3005680-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4564229							
<b>WG3006422-11 LCS</b>								
Sulfate (SO4)			100.9		%		90-110	13-MAR-19
<b>WG3006422-2 LCS</b>								
Sulfate (SO4)			99.5		%		90-110	13-MAR-19
<b>WG3006422-5 LCS</b>								
Sulfate (SO4)			100.2		%		90-110	13-MAR-19
<b>WG3006422-8 LCS</b>								
Sulfate (SO4)			100.8		%		90-110	13-MAR-19
<b>WG3006422-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-10 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-4 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-7 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4570798							
<b>WG3008301-2 LCS</b>								
Total Dissolved Solids			107.6		%		85-115	18-MAR-19
<b>WG3008301-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	18-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4567861							
<b>WG3007630-2 LCS</b>								
Total Kjeldahl Nitrogen			94.2		%		75-125	15-MAR-19
<b>WG3007630-6 LCS</b>								
Total Kjeldahl Nitrogen			93.6		%		75-125	15-MAR-19
<b>WG3007630-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAR-19
<b>WG3007630-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570669</b>							
<b>WG3008411-2</b>	<b>LCS</b>							
Total Suspended Solids			96.2		%		85-115	18-MAR-19
<b>WG3008411-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-MAR-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559749</b>							
<b>WG3004994-15</b>	<b>DUP</b>	<b>L2242795-3</b>						
Turbidity		3.61	3.57		NTU	1.1	15	12-MAR-19
<b>WG3004994-14</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	12-MAR-19
<b>WG3004994-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-MAR-19

# Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 10 of 11

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2242795

Report Date: 19-MAR-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	11-MAR-19 13:00	15-MAR-19 14:45	0.25	98	hours	EHTR-FM
	2	11-MAR-19 13:53	15-MAR-19 14:45	0.25	97	hours	EHTR-FM
	3	11-MAR-19 13:00	15-MAR-19 14:45	0.25	98	hours	EHTR-FM
pH	1	11-MAR-19 13:00	16-MAR-19 09:00	0.25	116	hours	EHTR-FM
	2	11-MAR-19 13:53	16-MAR-19 09:00	0.25	115	hours	EHTR-FM
	3	11-MAR-19 13:00	16-MAR-19 09:00	0.25	116	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2242795 were received on 12-MAR-19 09:20.

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

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

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

COC ID: **20190311-1512**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dylan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								FILE	PRESERV.	ANALYSIS	ANALYSIS	ANALYSIS								
								N	N	N	N	N								
								NONE	NONE	NONE	NONE	H2SO4								
								ALS_Package-DOC	HG-D-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC								
FR_DC1_QTR_2019-01-07_N	FR_DC1	WG		2019/03/11	13:00	G	5	1	1	1	1	1								
FR_HMW2_QTR_2019-01-07_N	FR_HMW2	WG		2019/03/11	13:53	G	5	1	1	1	1	1								
FR_HMW3_QTR_2019-01-07_N	FR_HMW3	WG		2019/03/11	13:00	G	5	1	1	1	1	1								



L2242795-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	March 11, 2019	<i>Jared Cayenne</i>	3/12/19

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jared Cayenne	Mobile #	250-421-9457	
Sampler's Signature	<i>Jared Cayenne</i>	Date/Time	March 11, 2019	

*gd*





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

Date Received: 14-MAR-19  
Report Date: 21-MAR-19 16:14 (MT)  
Version: FINAL

Client Phone: 250-865-5204

## Certificate of Analysis

Lab Work Order #: L2244162  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190313-1453  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2244162-1	L2244162-2	L2244162-3
		Description	WG	WG	WG
		Sampled Date	13-MAR-19	13-MAR-19	13-MAR-19
		Sampled Time	14:07	11:55	13:04
		Client ID	FR_GCMW- 2_QTR_2019-01- 07_N	FR_HMW1D_QTR _2019-01-07_N	FR_HMW1S_QTR_ 2019-01-07_N
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1760	3890	3840	
	Hardness (as CaCO3) (mg/L)	947	2600	2560	
	pH (pH)	7.72	7.43	7.35	
	ORP (mV)	469	349	359	
	Total Suspended Solids (mg/L)	2.3	4.0	3.2	
	Total Dissolved Solids (mg/L)	1470	4090	3820	
	Turbidity (NTU)	1.73	0.79	0.28	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.5	27.7	31.6	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	222	411	411	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	222	411	411	
	Ammonia as N (mg/L)	0.0597	0.217	0.938	DLHC
	Bromide (Br) (mg/L)	<0.25	<0.50	<0.50	DLHC
	Chloride (Cl) (mg/L)	<2.5	<5.0	<5.0	DLHC
	Fluoride (F) (mg/L)	0.13	<0.20	<0.20	DLHC
	Ion Balance (%)	85.9	83.1	87.7	
	Nitrate (as N) (mg/L)	83.5	151	141	DLHC
	Nitrite (as N) (mg/L)	<0.0050	<0.010	<0.010	DLHC
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	0.145	TKNI
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020	0.0034	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0039	0.0039	<0.0020	DLHC
	Sulfate (SO4) (mg/L)	574	2110	1940	DLHC
	Anion Sum (meq/L)	22.3	62.8	58.8	
	Cation Sum (meq/L)	19.2	52.3	51.5	
	Cation - Anion Balance (%)	-7.6	-9.2	-6.6	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.86	0.81
Total Organic Carbon (mg/L)		<0.50	0.87	1.06	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00042	0.00038	0.00034	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00020	<0.00020	DLA
	Barium (Ba)-Dissolved (mg/L)	0.0780	0.0110	0.0103	DLA
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.040	<0.040	DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010	<0.00010	DLA

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2244162-1	L2244162-2	L2244162-3
		Description	WG	WG	WG
		Sampled Date	13-MAR-19	13-MAR-19	13-MAR-19
		Sampled Time	14:07	11:55	13:04
		Client ID	FR_GCMW- 2_QTR_2019-01- 07_N	FR_HMW1D_QTR _2019-01-07_N	FR_HMW1S_QTR_ 2019-01-07_N
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.014	0.044	0.045	
	Cadmium (Cd)-Dissolved (ug/L)	0.0634	0.080	0.125	
	Calcium (Ca)-Dissolved (mg/L)	210	533	540	
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	4.54	4.12	
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	
	Lithium (Li)-Dissolved (mg/L)	0.199	0.0827	0.0940	
	Magnesium (Mg)-Dissolved (mg/L)	103	308	295	
	Manganese (Mn)-Dissolved (mg/L)	0.00145	0.538	0.335	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00192	0.00074	0.00098	
	Nickel (Ni)-Dissolved (mg/L)	0.00343	0.0334	0.0401	
	Potassium (K)-Dissolved (mg/L)	3.44	6.92	7.43	
	Selenium (Se)-Dissolved (ug/L)	121	119	214	
	Silicon (Si)-Dissolved (mg/L)	1.88	2.53	2.24	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.000020 <sup>DLA</sup>	
	Sodium (Na)-Dissolved (mg/L)	4.23	2.33	2.14	
	Strontium (Sr)-Dissolved (mg/L)	0.337	0.343	0.335	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	0.000033 <sup>DLA</sup>	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00826	0.0124	0.0120	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	
	Zinc (Zn)-Dissolved (mg/L)	0.0025	0.0061	0.0049	

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2244162-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2244162-1, -2, -3

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

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

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

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

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

## Reference Information

should be near-zero.

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

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

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

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

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

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

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

### Chain of Custody Numbers:

20190313-1453

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 1 of 8

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

Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573472</b>							
<b>WG3010407-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.9		%		85-115	20-MAR-19
<b>WG3010407-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568644</b>							
<b>WG3008501-9</b>	<b>DUP</b>	<b>L2244162-3</b>						
Alkalinity, Total (as CaCO3)		411	414		mg/L	0.8	20	18-MAR-19
<b>WG3008501-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			94.8		%		85-115	18-MAR-19
<b>WG3008501-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570338</b>							
<b>WG3008707-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.4		%		80-120	18-MAR-19
<b>WG3008707-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568170</b>							
<b>WG3007991-2</b>	<b>LCS</b>							
Bromide (Br)			98.9		%		85-115	16-MAR-19
Bromide (Br)			98.9		%		85-115	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573347</b>							
<b>WG3010382-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.2		%		80-120	20-MAR-19
<b>WG3010382-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573347</b>							
<b>WG3010382-6</b>	<b>LCS</b>							
Total Organic Carbon			96.6		%		80-120	20-MAR-19
<b>WG3010382-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	20-MAR-19



## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4568170</b>								
<b>WG3007991-2</b>	<b>LCS</b>							
Chloride (Cl)			101.1		%		90-110	16-MAR-19
Chloride (Cl)			101.1		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	16-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4568644</b>								
<b>WG3008501-9</b>	<b>DUP</b>	<b>L2244162-3</b>						
Conductivity (@ 25C)		3840	3870		uS/cm	0.8	10	18-MAR-19
<b>WG3008501-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	18-MAR-19
<b>WG3008501-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-MAR-19
<b>F-IC-N-CL</b>								
<b>Batch R4568170</b>								
<b>WG3007991-2</b>	<b>LCS</b>							
Fluoride (F)			106.4		%		90-110	16-MAR-19
Fluoride (F)			106.4		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-MAR-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4570191</b>								
<b>WG3007625-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.3		%		80-120	19-MAR-19
<b>WG3007625-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4570338</b>								
<b>WG3008707-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.3		%		80-120	18-MAR-19
Antimony (Sb)-Dissolved			102.2		%		80-120	18-MAR-19
Arsenic (As)-Dissolved			99.1		%		80-120	18-MAR-19
Barium (Ba)-Dissolved			98.0		%		80-120	18-MAR-19
Bismuth (Bi)-Dissolved			98.9		%		80-120	18-MAR-19
Boron (B)-Dissolved			96.7		%		80-120	18-MAR-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	18-MAR-19





## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570338</b>							
<b>WG3008707-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			96.6		%		80-120	18-MAR-19
Chromium (Cr)-Dissolved			97.6		%		80-120	18-MAR-19
Cobalt (Co)-Dissolved			96.2		%		80-120	18-MAR-19
Copper (Cu)-Dissolved			98.0		%		80-120	18-MAR-19
Iron (Fe)-Dissolved			98.9		%		80-120	18-MAR-19
Lead (Pb)-Dissolved			99.8		%		80-120	18-MAR-19
Lithium (Li)-Dissolved			96.2		%		80-120	18-MAR-19
Magnesium (Mg)-Dissolved			99.5		%		80-120	18-MAR-19
Manganese (Mn)-Dissolved			99.4		%		80-120	18-MAR-19
Molybdenum (Mo)-Dissolved			102.7		%		80-120	18-MAR-19
Nickel (Ni)-Dissolved			98.9		%		80-120	18-MAR-19
Potassium (K)-Dissolved			98.0		%		80-120	18-MAR-19
Selenium (Se)-Dissolved			105.4		%		80-120	18-MAR-19
Silicon (Si)-Dissolved			98.6		%		60-140	18-MAR-19
Silver (Ag)-Dissolved			100.0		%		80-120	18-MAR-19
Sodium (Na)-Dissolved			100.7		%		80-120	18-MAR-19
Strontium (Sr)-Dissolved			102.5		%		80-120	18-MAR-19
Thallium (Tl)-Dissolved			97.2		%		80-120	18-MAR-19
Tin (Sn)-Dissolved			103.2		%		80-120	18-MAR-19
Titanium (Ti)-Dissolved			91.8		%		80-120	18-MAR-19
Uranium (U)-Dissolved			98.6		%		80-120	18-MAR-19
Vanadium (V)-Dissolved			100.3		%		80-120	18-MAR-19
Zinc (Zn)-Dissolved			94.6		%		80-120	18-MAR-19
<b>WG3008707-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19



## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4570338</b>							
<b>WG3008707-1</b>	<b>MB</b>	<b>NP</b>						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4576610</b>							
<b>WG3011068-6</b>	<b>LCS</b>							
Ammonia as N			101.7		%		85-115	20-MAR-19
<b>WG3011068-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568170</b>							
<b>WG3007991-2</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	16-MAR-19
Nitrite (as N)			104.3		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4568170							
<b>WG3007991-2</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	16-MAR-19
Nitrate (as N)			100.1		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4571747							
<b>WG3009715-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	19-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4568177							
<b>WG3008005-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.5		%		80-120	17-MAR-19
<b>WG3008005-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4568644							
<b>WG3008501-9</b>	<b>DUP</b>	<b>L2244162-3</b>						
pH		7.35	7.54	J	pH	0.19	0.2	18-MAR-19
<b>WG3008501-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	18-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4564447							
<b>WG3005680-26</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	14-MAR-19
<b>WG3005680-7</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4568170							
<b>WG3007991-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	16-MAR-19
Sulfate (SO4)			102.7		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4576969</b>							
<b>WG3010105-3</b>	<b>DUP</b>	<b>L2244162-2</b>						
Total Dissolved Solids		4090	4010		mg/L	2.0	20	20-MAR-19
<b>WG3010105-2</b>	<b>LCS</b>							
Total Dissolved Solids			105.5		%		85-115	20-MAR-19
<b>WG3010105-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-MAR-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4574290</b>							
<b>WG3010655-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	18-MAR-19
<b>WG3010655-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	18-MAR-19
<b>WG3010655-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	18-MAR-19
<b>WG3010655-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573311</b>							
<b>WG3009094-11</b>	<b>LCS</b>							
Total Suspended Solids			95.7		%		85-115	19-MAR-19
<b>WG3009094-8</b>	<b>LCS</b>							
Total Suspended Solids			94.5		%		85-115	19-MAR-19
<b>WG3009094-10</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-MAR-19
<b>WG3009094-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-MAR-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4565449</b>							
<b>WG3006698-41</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	14-MAR-19
<b>WG3006698-40</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-MAR-19

# Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 7 of 8

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2244162

Report Date: 21-MAR-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	13-MAR-19 14:07	19-MAR-19 10:00	0.25	140	hours	EHTR-FM
	2	13-MAR-19 11:55	19-MAR-19 10:00	0.25	142	hours	EHTR-FM
	3	13-MAR-19 13:04	19-MAR-19 10:00	0.25	141	hours	EHTR-FM
pH	1	13-MAR-19 14:07	18-MAR-19 09:00	0.25	115	hours	EHTR-FM
	2	13-MAR-19 11:55	18-MAR-19 09:00	0.25	117	hours	EHTR-FM
	3	13-MAR-19 13:04	18-MAR-19 09:00	0.25	116	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2244162 were received on 14-MAR-19 08:45.

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

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

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

COC ID:	20190313-1453			TURNAROUND TIME:		RUSH:					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution			
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	Excel	PDF	EDD
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:			
Address	PO Box 100			Address	2559 29 Street NE			Email 3:			
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:			
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number			



L2244162-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
								ALS_Package-DOC	HG-D-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	F	F	F	N	N		
FR_GCMW-2_QTR_2019-01-07_N	FR_GCMW-2	WG		2019/03/13	14:07	G	5	1	1	1	1	1							
FR_HMW1D_QTR_2019-01-07_N	FR_HMW1D	WG		2019/03/13	11:55	G	5	1	1	1	1	1							
FR_HMW1S_QTR_2019-01-07_N	FR_HMW1S	WG		2019/03/13	13:04	G	5	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Jared Cayenne	DATE/TIME March 13, 2019	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME 3/14 8:45
--	--	-----------------------------	---	------------------------

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Jared Cayenne	Mobile #	250-421-9457	
Sampler's Signature	<i>[Signature]</i>	Date/Time	March 13, 2019	

*Jc*



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

Date Received: 15-MAR-19  
Report Date: 24-MAR-19 16:49 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2245057  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190314-1358  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2245057-1 WG 14-MAR-19 10:45 FR_POTWELLS_Q TR_2019-01-07_N	L2245057-2 WG 14-MAR-19 10:30 FR_09-01- A_QTR_2019-01- 07_N	L2245057-3 WG 14-MAR-19 09:53 FR_09-01- B_QTR_2019-01- 07_N	L2245057-4 WG 14-MAR-19 09:40 FR_09-02- A_QTR_2019-01- 07_N	L2245057-5 WG 14-MAR-19 13:20 FR_09-02- B_QTR_2019-01- 07_N
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	624	1000	983	1010	1010
	Hardness (as CaCO3) (mg/L)	342	589	586	608	600
	pH (pH)	8.12	7.89	7.85	8.06	8.05
	ORP (mV)	368	491	427	341	412
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.1	5.3	2.4
	Total Dissolved Solids (mg/L)	435	808	777	821	764
	Turbidity (NTU)	0.13	0.11	0.52	4.21	1.75
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.3	6.1	3.7	4.1	5.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	159	205	197	207	201
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	159	205	197	207	201
	Ammonia as N (mg/L)	0.0454	0.0388	0.0287	0.0467	0.0306
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	1.78	1.73	1.72	1.67
	Fluoride (F) (mg/L)	0.132	0.106	0.104	0.133	0.173
	Ion Balance (%)	98.3	99.8	101	103	103
	Nitrate (as N) (mg/L)	4.44	21.3	21.1	21.9	21.8
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.223 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017	0.0019	0.0028	0.0031	0.0021
	Phosphorus (P)-Total (mg/L)	0.0027	0.0023	0.0028	0.0184	0.0038
	Sulfate (SO4) (mg/L)	169	302	300	296	296
	Anion Sum (meq/L)	7.01	12.0	11.7	11.9	11.8
	Cation Sum (meq/L)	6.89	11.9	11.9	12.3	12.2
	Cation - Anion Balance (%)	-0.8	-0.1	0.6	1.5	1.5
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.64	<0.50	0.58
Total Organic Carbon (mg/L)		<0.50	0.68	<0.50	0.53	0.66
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00015	<0.00010	0.00015	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0738	0.0590	0.0882	0.113	0.159
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2245057-1	L2245057-2	L2245057-3	L2245057-4	L2245057-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	14-MAR-19	14-MAR-19	14-MAR-19	14-MAR-19	14-MAR-19
		Sampled Time	10:45	10:30	09:53	09:40	13:20
		Client ID	FR_POTWELLS_Q TR_2019-01-07_N	FR_09-01- A_QTR_2019-01- 07_N	FR_09-01- B_QTR_2019-01- 07_N	FR_09-02- A_QTR_2019-01- 07_N	FR_09-02- B_QTR_2019-01- 07_N
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0101	0.0553	0.0351	0.0414	0.0334
	Calcium (Ca)-Dissolved (mg/L)		87.6	133	134	138	138
	Chromium (Cr)-Dissolved (mg/L)		0.00011	<0.00010	0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	0.12	0.13	0.11	0.12
	Copper (Cu)-Dissolved (mg/L)		0.00063	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0072	0.0411	0.0344	0.0539	0.0436
	Magnesium (Mg)-Dissolved (mg/L)		30.0	62.1	61.2	63.7	62.1
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000629	0.000637	0.000728	0.00165	0.000896
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00069	0.00052	0.00051	0.00060
	Potassium (K)-Dissolved (mg/L)		0.625	2.08	2.34	1.53	1.74
	Selenium (Se)-Dissolved (ug/L)		25.4	50.5	52.2	50.4	51.8
	Silicon (Si)-Dissolved (mg/L)		1.47	1.60	1.65	1.46	1.60
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.736	2.66	2.46	2.62	2.67
	Strontium (Sr)-Dissolved (mg/L)		0.154	0.178	0.152	0.197	0.206
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00112	0.00349	0.00321	0.00382	0.00335
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0028	<0.0010	<0.0010	<0.0010	0.0012

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2245057-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2245057-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2245057-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2245057-1, -2, -3, -4, -5
Matrix Spike	Nitrate (as N)	MS-B	L2245057-1, -2, -3, -4, -5
Matrix Spike	Sulfate (SO4)	MS-B	L2245057-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

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

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL**                      Water                      pH                      APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

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

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

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

## Reference Information

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

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

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

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

### Chain of Custody Numbers:

20190314-1358

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 1 of 12

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

Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573472</b>							
<b>WG3010407-9</b>	<b>DUP</b>	<b>L2245057-5</b>						
Acidity (as CaCO3)		5.8	5.7		mg/L	2.4	20	20-MAR-19
<b>WG3010407-16</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	20-MAR-19
<b>WG3010407-18</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	20-MAR-19
<b>WG3010407-15</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-MAR-19
<b>WG3010407-17</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568644</b>							
<b>WG3008501-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.0		%		85-115	18-MAR-19
<b>WG3008501-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-MAR-19
<b>Batch</b>	<b>R4573508</b>							
<b>WG3010410-9</b>	<b>DUP</b>	<b>L2245057-5</b>						
Alkalinity, Total (as CaCO3)		201	199		mg/L	1.0	20	20-MAR-19
<b>WG3010410-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.7		%		85-115	20-MAR-19
<b>WG3010410-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.6		%		85-115	20-MAR-19
<b>WG3010410-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAR-19
<b>WG3010410-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-3</b>	<b>DUP</b>	<b>L2245057-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	19-MAR-19
<b>WG3009743-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.5		%		80-120	19-MAR-19
<b>WG3009743-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAR-19
<b>WG3009743-4</b>	<b>MS</b>	<b>L2245057-1</b>						
Beryllium (Be)-Dissolved			95.8		%		70-130	19-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4568195</b>							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Bromide (Br)			99.7		%		85-115	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Bromide (Br)			99.1		%		75-125	16-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4579791</b>							
<b>WG3012539-14</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.3		%		80-120	22-MAR-19
<b>WG3012539-13</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4579791</b>							
<b>WG3012539-14</b>	<b>LCS</b>							
Total Organic Carbon			88.5		%		80-120	22-MAR-19
<b>WG3012539-13</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	22-MAR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4568195</b>							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Chloride (Cl)		1.67	1.67		mg/L	0.3	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Chloride (Cl)			98.4		%		90-110	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Chloride (Cl)			107.3		%		75-125	16-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4568644</b>							
<b>WG3008501-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.6		%		90-110	18-MAR-19
<b>WG3008501-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-MAR-19



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4573508</b>							
<b>WG3010410-9</b>	<b>DUP</b>	<b>L2245057-5</b>						
Conductivity (@ 25C)		1010	1030		uS/cm	2.0	10	20-MAR-19
<b>WG3010410-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	20-MAR-19
<b>WG3010410-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.4		%		90-110	20-MAR-19
<b>WG3010410-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAR-19
<b>WG3010410-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-MAR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4568195</b>							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Fluoride (F)		0.173	0.177		mg/L	2.4	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Fluoride (F)			100.2		%		90-110	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Fluoride (F)			107.0		%		75-125	16-MAR-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4572627</b>							
<b>WG3010527-3</b>	<b>DUP</b>	<b>L2245057-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	20-MAR-19
<b>WG3010527-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.5		%		80-120	20-MAR-19
<b>WG3010527-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	20-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-3</b>	<b>DUP</b>	<b>L2245057-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	19-MAR-19
Antimony (Sb)-Dissolved		0.00015	0.00014		mg/L	7.3	20	19-MAR-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-MAR-19
Barium (Ba)-Dissolved		0.0590	0.0572		mg/L	3.1	20	19-MAR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-MAR-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-19





## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-3</b>	<b>DUP</b>	<b>L2245057-2</b>						
Cadmium (Cd)-Dissolved		0.0000553	0.0000525		mg/L	5.2	20	19-MAR-19
Calcium (Ca)-Dissolved		133	137		mg/L	3.1	20	19-MAR-19
Chromium (Cr)-Dissolved		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	19-MAR-19
Cobalt (Co)-Dissolved		0.00012	0.00012		mg/L	1.2	20	19-MAR-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-MAR-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-MAR-19
Lithium (Li)-Dissolved		0.0411	0.0409		mg/L	0.5	20	19-MAR-19
Magnesium (Mg)-Dissolved		62.1	64.2		mg/L	3.2	20	19-MAR-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-MAR-19
Molybdenum (Mo)-Dissolved		0.000637	0.000698		mg/L	9.2	20	19-MAR-19
Nickel (Ni)-Dissolved		0.00069	0.00065		mg/L	6.6	20	19-MAR-19
Potassium (K)-Dissolved		2.08	2.12		mg/L	1.6	20	19-MAR-19
Selenium (Se)-Dissolved		0.0505	0.0504		mg/L	0.3	20	19-MAR-19
Silicon (Si)-Dissolved		1.60	1.53		mg/L	4.3	20	19-MAR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-MAR-19
Sodium (Na)-Dissolved		2.66	2.69		mg/L	1.3	20	19-MAR-19
Strontium (Sr)-Dissolved		0.178	0.180		mg/L	1.1	20	19-MAR-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-MAR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-MAR-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-19
Uranium (U)-Dissolved		0.00349	0.00346		mg/L	0.8	20	19-MAR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-MAR-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	19-MAR-19
<b>WG3009743-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.9		%		80-120	19-MAR-19
Antimony (Sb)-Dissolved			96.4		%		80-120	19-MAR-19
Arsenic (As)-Dissolved			98.1		%		80-120	19-MAR-19
Barium (Ba)-Dissolved			94.5		%		80-120	19-MAR-19
Bismuth (Bi)-Dissolved			107.1		%		80-120	19-MAR-19
Boron (B)-Dissolved			95.6		%		80-120	19-MAR-19
Cadmium (Cd)-Dissolved			100.6		%		80-120	19-MAR-19
Calcium (Ca)-Dissolved			95.6		%		80-120	19-MAR-19
Chromium (Cr)-Dissolved			98.0		%		80-120	19-MAR-19



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-2</b>	<b>LCS</b>							
Cobalt (Co)-Dissolved			97.4		%		80-120	19-MAR-19
Copper (Cu)-Dissolved			96.1		%		80-120	19-MAR-19
Iron (Fe)-Dissolved			90.2		%		80-120	19-MAR-19
Lead (Pb)-Dissolved			98.3		%		80-120	19-MAR-19
Lithium (Li)-Dissolved			96.1		%		80-120	19-MAR-19
Magnesium (Mg)-Dissolved			99.5		%		80-120	19-MAR-19
Manganese (Mn)-Dissolved			92.5		%		80-120	19-MAR-19
Molybdenum (Mo)-Dissolved			95.8		%		80-120	19-MAR-19
Nickel (Ni)-Dissolved			97.1		%		80-120	19-MAR-19
Potassium (K)-Dissolved			98.1		%		80-120	19-MAR-19
Selenium (Se)-Dissolved			97.6		%		80-120	19-MAR-19
Silicon (Si)-Dissolved			97.1		%		60-140	19-MAR-19
Silver (Ag)-Dissolved			92.7		%		80-120	19-MAR-19
Sodium (Na)-Dissolved			100.8		%		80-120	19-MAR-19
Strontium (Sr)-Dissolved			95.0		%		80-120	19-MAR-19
Thallium (Tl)-Dissolved			97.2		%		80-120	19-MAR-19
Tin (Sn)-Dissolved			95.8		%		80-120	19-MAR-19
Titanium (Ti)-Dissolved			92.2		%		80-120	19-MAR-19
Uranium (U)-Dissolved			94.5		%		80-120	19-MAR-19
Vanadium (V)-Dissolved			98.8		%		80-120	19-MAR-19
Zinc (Zn)-Dissolved			100.1		%		80-120	19-MAR-19
<b>WG3009743-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAR-19



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
<b>WG3009743-4</b>	<b>MS</b>	<b>L2245057-1</b>						
Aluminum (Al)-Dissolved			97.2		%		70-130	19-MAR-19
Antimony (Sb)-Dissolved			99.9		%		70-130	19-MAR-19
Arsenic (As)-Dissolved			101.4		%		70-130	19-MAR-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	19-MAR-19
Bismuth (Bi)-Dissolved			88.0		%		70-130	19-MAR-19
Boron (B)-Dissolved			95.7		%		70-130	19-MAR-19
Cadmium (Cd)-Dissolved			100.6		%		70-130	19-MAR-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	19-MAR-19
Chromium (Cr)-Dissolved			98.7		%		70-130	19-MAR-19
Cobalt (Co)-Dissolved			94.5		%		70-130	19-MAR-19
Copper (Cu)-Dissolved			93.3		%		70-130	19-MAR-19
Iron (Fe)-Dissolved			93.4		%		70-130	19-MAR-19
Lead (Pb)-Dissolved			93.8		%		70-130	19-MAR-19
Lithium (Li)-Dissolved			99.8		%		70-130	19-MAR-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	19-MAR-19



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573113</b>							
<b>WG3009743-4</b>	<b>MS</b>	<b>L2245057-1</b>						
Manganese (Mn)-Dissolved			92.0		%		70-130	19-MAR-19
Molybdenum (Mo)-Dissolved			99.7		%		70-130	19-MAR-19
Nickel (Ni)-Dissolved			94.9		%		70-130	19-MAR-19
Potassium (K)-Dissolved			102.5		%		70-130	19-MAR-19
Selenium (Se)-Dissolved			98.5		%		70-130	19-MAR-19
Silicon (Si)-Dissolved			94.0		%		70-130	19-MAR-19
Silver (Ag)-Dissolved			94.6		%		70-130	19-MAR-19
Sodium (Na)-Dissolved			97.6		%		70-130	19-MAR-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	19-MAR-19
Thallium (Tl)-Dissolved			93.9		%		70-130	19-MAR-19
Tin (Sn)-Dissolved			97.1		%		70-130	19-MAR-19
Titanium (Ti)-Dissolved			96.5		%		70-130	19-MAR-19
Uranium (U)-Dissolved			94.4		%		70-130	19-MAR-19
Vanadium (V)-Dissolved			99.7		%		70-130	19-MAR-19
Zinc (Zn)-Dissolved			96.0		%		70-130	19-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4578388</b>							
<b>WG3012133-2</b>	<b>LCS</b>							
Ammonia as N			107.5		%		85-115	21-MAR-19
<b>WG3012133-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568195</b>							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Nitrite (as N)			104.6		%		90-110	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Nitrite (as N)			113.8		%		75-125	16-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4568195							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Nitrate (as N)		21.8	21.8		mg/L	0.1	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Nitrate (as N)			N/A	MS-B	%		-	16-MAR-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4571747							
<b>WG3009715-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	19-MAR-19
<b>WG3009715-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	19-MAR-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4568177							
<b>WG3008005-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.5		%		80-120	17-MAR-19
<b>WG3008005-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-MAR-19
<b>PH-CL</b>		<b>Water</b>						
Batch	R4568644							
<b>WG3008501-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	18-MAR-19
Batch	R4573508							
<b>WG3010410-9</b>	<b>DUP</b>	<b>L2245057-5</b>						
pH		8.05	8.08	J	pH	0.03	0.2	20-MAR-19
<b>WG3010410-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	20-MAR-19
<b>WG3010410-8</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	20-MAR-19
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4568187							
<b>WG3007848-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Orthophosphate-Dissolved (as P)		0.0021	0.0023		mg/L	13	20	16-MAR-19
<b>WG3007848-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568187</b>							
<b>WG3007848-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	16-MAR-19
<b>WG3007848-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-MAR-19
<b>WG3007848-4</b>	<b>MS</b>	<b>L2245057-4</b>						
Orthophosphate-Dissolved (as P)			104.2		%		70-130	16-MAR-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568195</b>							
<b>WG3008022-3</b>	<b>DUP</b>	<b>L2245057-5</b>						
Sulfate (SO4)		296	296		mg/L	0.2	20	16-MAR-19
<b>WG3008022-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.7		%		90-110	16-MAR-19
<b>WG3008022-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-MAR-19
<b>WG3008022-4</b>	<b>MS</b>	<b>L2245057-5</b>						
Sulfate (SO4)			N/A	MS-B	%		-	16-MAR-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4576969</b>							
<b>WG3010105-6</b>	<b>DUP</b>	<b>L2245057-1</b>						
Total Dissolved Solids		435	440		mg/L	1.0	20	20-MAR-19
<b>WG3010105-5</b>	<b>LCS</b>							
Total Dissolved Solids			103.5		%		85-115	20-MAR-19
<b>WG3010105-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-MAR-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4574290</b>							
<b>WG3010655-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	18-MAR-19
<b>WG3010655-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	18-MAR-19
<b>WG3010655-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	18-MAR-19
<b>WG3010655-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19



## Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4576990							
<b>WG3010009-4</b>	<b>LCS</b>							
Total Suspended Solids			106.3		%		85-115	20-MAR-19
<b>WG3010009-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4568083							
<b>WG3007908-2</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	16-MAR-19
<b>WG3007908-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	16-MAR-19

# Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 11 of 12

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---



# Quality Control Report

Workorder: L2245057

Report Date: 24-MAR-19

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	14-MAR-19 10:45	19-MAR-19 10:00	0.25	119	hours	EHTR-FM
	2	14-MAR-19 10:30	19-MAR-19 10:00	0.25	120	hours	EHTR-FM
	3	14-MAR-19 09:53	19-MAR-19 10:00	0.25	120	hours	EHTR-FM
	4	14-MAR-19 09:40	19-MAR-19 10:00	0.25	120	hours	EHTR-FM
	5	14-MAR-19 13:20	19-MAR-19 10:00	0.25	117	hours	EHTR-FM
pH	1	14-MAR-19 10:45	18-MAR-19 09:00	0.25	94	hours	EHTR-FM
	2	14-MAR-19 10:30	20-MAR-19 09:00	0.25	143	hours	EHTR-FM
	3	14-MAR-19 09:53	20-MAR-19 09:00	0.25	143	hours	EHTR-FM
	4	14-MAR-19 09:40	20-MAR-19 09:00	0.25	143	hours	EHTR-FM
	5	14-MAR-19 13:20	20-MAR-19 09:00	0.25	140	hours	EHTR-FM

**Legend & Qualifier Definitions:**

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

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2245057 were received on 15-MAR-19 09:00.

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

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

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

COC ID: 20190314-1358      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dylan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

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



Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC								
FR_09-01-A_QTR_2019-01-07_N	FR_09-01-A	WG		2019/03/14	10:45	G	5	1	1	1	1	1								
FR_09-01-B_QTR_2019-01-07_N	FR_09-01-B	WG		2019/03/14	10:30	G	5	1	1	1	1	1								
FR_09-02-A_QTR_2019-01-07_N	FR_09-02-A	WG		2019/03/14	09:53	G	5	1	1	1	1	1								
FR_09-02-B_QTR_2019-01-07_N	FR_09-02-B	WG		2019/03/14	09:40	G	5	1	1	1	1	1								
FR_POTWELLS_QTR_2019-01-07_N	FR_POTWELLS	WG		2019/03/14	13:20	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	March 14, 2019	DR 15-Mar-19	

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) X		Jared Cayenne	250-421-9457
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Signature	Date/Time
			March 14, 2019

800



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

Date Received: 22-MAR-19  
Report Date: 30-MAR-19 14:23 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2248235  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190321-1421  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2248235-1 WG 21-MAR-19 12:30 FR_GH_WELL4_Q TR_2019-01-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1340			
	Hardness (as CaCO3) (mg/L)	767			
	pH (pH)	7.98			
	ORP (mV)	452			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	1030	DLHC		
	Turbidity (NTU)	4.92			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	12.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	280			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	280			
	Ammonia as N (mg/L)	0.115			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	<0.10	DLHC		
	Ion Balance (%)	100			
	Nitrate (as N) (mg/L)	37.7	DLHC		
	Nitrite (as N) (mg/L)	0.579	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	342	DLHC		
	Anion Sum (meq/L)	15.4			
	Cation Sum (meq/L)	15.5			
	Cation - Anion Balance (%)	0.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.106			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2248235-1 WG 21-MAR-19 12:30 FR_GH_WELL4_Q TR_2019-01-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.012			
	Cadmium (Cd)-Dissolved (ug/L)	0.0500			
	Calcium (Ca)-Dissolved (mg/L)	181			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.58			
	Copper (Cu)-Dissolved (mg/L)	0.00109			
	Iron (Fe)-Dissolved (mg/L)	0.071			
	Lead (Pb)-Dissolved (mg/L)	0.000076			
	Lithium (Li)-Dissolved (mg/L)	0.0292			
	Magnesium (Mg)-Dissolved (mg/L)	76.5			
	Manganese (Mn)-Dissolved (mg/L)	0.0111			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000329			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.44			
	Selenium (Se)-Dissolved (ug/L)	147			
	Silicon (Si)-Dissolved (mg/L)	2.78			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.98			
	Strontium (Sr)-Dissolved (mg/L)	0.242			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00339			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0319			

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Tin (Sn)-Dissolved	DUP-H	L2248235-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulfate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			

## Reference Information

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

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

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

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

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

**Chain of Custody Numbers:**

20190321-1421

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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





## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 1 of 9

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4586355							
<b>WG3015263-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.2		%		85-115	27-MAR-19
<b>WG3015263-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	27-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4585726							
<b>WG3015272-12</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.5		%		85-115	27-MAR-19
<b>WG3015272-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4585464							
<b>WG3015046-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.9		%		80-120	27-MAR-19
<b>WG3015046-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Bromide (Br)			107.3		%		85-115	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Bromide (Br)			103.0		%		85-115	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Bromide (Br)			102.0		%		85-115	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4587598							
<b>WG3017809-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			107.3		%		80-120	29-MAR-19
<b>WG3017809-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4587598							
<b>WG3017809-2</b>	<b>LCS</b>							
Total Organic Carbon			112.5		%		80-120	29-MAR-19
<b>WG3017809-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Chloride (Cl)			104.8		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Chloride (Cl)			102.7		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Chloride (Cl)			101.3		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4585726							
<b>WG3015272-12</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	27-MAR-19
<b>WG3015272-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Fluoride (F)			109.9		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Fluoride (F)			104.0		%		90-110	23-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Fluoride (F)			106.0		%		90-110	23-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4586484</b>							
<b>WG3015964-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.9		%		80-120	28-MAR-19
<b>WG3015964-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-MAR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4585464</b>							
<b>WG3015046-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.2		%		80-120	27-MAR-19
Antimony (Sb)-Dissolved			97.5		%		80-120	27-MAR-19
Arsenic (As)-Dissolved			98.9		%		80-120	27-MAR-19
Barium (Ba)-Dissolved			103.1		%		80-120	27-MAR-19
Bismuth (Bi)-Dissolved			100.5		%		80-120	27-MAR-19
Boron (B)-Dissolved			95.0		%		80-120	27-MAR-19
Cadmium (Cd)-Dissolved			100.4		%		80-120	27-MAR-19
Calcium (Ca)-Dissolved			97.4		%		80-120	27-MAR-19
Chromium (Cr)-Dissolved			100.4		%		80-120	27-MAR-19
Cobalt (Co)-Dissolved			100.3		%		80-120	27-MAR-19
Copper (Cu)-Dissolved			98.5		%		80-120	27-MAR-19
Iron (Fe)-Dissolved			94.7		%		80-120	27-MAR-19
Lead (Pb)-Dissolved			99.6		%		80-120	27-MAR-19
Lithium (Li)-Dissolved			92.8		%		80-120	27-MAR-19
Magnesium (Mg)-Dissolved			106.0		%		80-120	27-MAR-19
Manganese (Mn)-Dissolved			100.3		%		80-120	27-MAR-19
Molybdenum (Mo)-Dissolved			100.0		%		80-120	27-MAR-19
Nickel (Ni)-Dissolved			102.0		%		80-120	27-MAR-19
Potassium (K)-Dissolved			96.8		%		80-120	27-MAR-19
Selenium (Se)-Dissolved			94.6		%		80-120	27-MAR-19
Silicon (Si)-Dissolved			95.6		%		60-140	27-MAR-19
Silver (Ag)-Dissolved			97.5		%		80-120	27-MAR-19
Sodium (Na)-Dissolved			99.3		%		80-120	27-MAR-19
Strontium (Sr)-Dissolved			97.7		%		80-120	27-MAR-19
Thallium (Tl)-Dissolved			101.0		%		80-120	27-MAR-19
Tin (Sn)-Dissolved			96.7		%		80-120	27-MAR-19
Titanium (Ti)-Dissolved			96.9		%		80-120	27-MAR-19
Uranium (U)-Dissolved			95.9		%		80-120	27-MAR-19



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4585464</b>							
<b>WG3015046-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			101.3		%		80-120	27-MAR-19
Zinc (Zn)-Dissolved			97.4		%		80-120	27-MAR-19
<b>WG3015046-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-MAR-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4587286							
<b>WG3017432-2</b>	<b>LCS</b>							
Ammonia as N			98.3		%		85-115	29-MAR-19
<b>WG3017432-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Nitrite (as N)			105.2		%		90-110	23-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Nitrite (as N)			109.9		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Nitrite (as N)			107.2		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Nitrate (as N)			104.3		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Nitrate (as N)			102.7		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4585058							
<b>WG3014746-19</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	26-MAR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4584910							
<b>WG3014693-42 LCS</b>								
Phosphorus (P)-Total			106.2		%		80-120	27-MAR-19
<b>WG3014693-41 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4585726							
<b>WG3015272-12 LCS</b>								
pH			7.04		pH		6.9-7.1	27-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4580378							
<b>WG3013132-2 LCS</b>								
Orthophosphate-Dissolved (as P)			102.6		%		80-120	24-MAR-19
<b>WG3013132-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2 LCS</b>								
Sulfate (SO4)			105.3		%		90-110	24-MAR-19
<b>WG3016346-5 LCS</b>								
Sulfate (SO4)			104.4		%		90-110	24-MAR-19
<b>WG3016346-9 LCS</b>								
Sulfate (SO4)			102.8		%		90-110	24-MAR-19
<b>WG3016346-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAR-19
<b>WG3016346-4 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAR-19
<b>WG3016346-8 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4587133							
<b>WG3016285-2 LCS</b>								
Total Dissolved Solids			96.6		%		85-115	28-MAR-19
<b>WG3016285-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	28-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587284</b>							
<b>WG3017296-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.7		%		75-125	29-MAR-19
<b>WG3017296-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	29-MAR-19
<b>WG3017296-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>WG3017296-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587072</b>							
<b>WG3016295-2</b>	<b>LCS</b>							
Total Suspended Solids			93.9		%		85-115	28-MAR-19
<b>WG3016295-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-MAR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4580128</b>							
<b>WG3012842-14</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	22-MAR-19
<b>WG3012842-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-MAR-19

# Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 8 of 9

## Legend:

---

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



# Quality Control Report

Workorder: L2248235

Report Date: 30-MAR-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	21-MAR-19 12:30	26-MAR-19 13:40	0.25	121	hours	EHTR-FM
pH	1	21-MAR-19 12:30	27-MAR-19 09:00	0.25	140	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2248235 were received on 22-MAR-19 09:00.

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

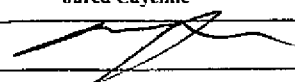
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# Teck

COC ID:	20190321-1421	TURNAROUND TIME:		RUSH:	
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Fording River Operation	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Neil MacDonald	Lab Contact	Lyudmyla Shvets	Email 1:	neil.macdonald@teck.com X X X
Email	Neil.MacDonald@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	dylan.begln@teck.com X X X
Address	PO Box 100	Address	2559 29 Street NE	Email 3:	chelsea.jensen@teck.com X X X
City	Elkford	Province	BC	Email 4:	jared.cayenne@teck.com X X X
Postal Code	V0B 1H0	Country	Canada	Email 5:	scott.roughhead@teck.com X X X
Phone Number	1-250-865-5204	City	Calgary	Province	AB
		Postal Code	T1Y 7B5	Country	Canada
		Phone Number	403 407 1794	Email 6:	teckcoal@equisonline.com X
				PO number	

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, PL: Field & Lab, N: None																											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	F	F	N	N																											
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC																											
FR_GH_WELL4_QTR_2019-01-07_N	FR_GH_WELL4	WG		2019/03/21	12:30	G	5	1	1	1	1	1																											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME			ACCEPTED BY/AFFILIATION			DATE/TIME		
			Jared Cayenne			March 21, 2019			DKC			2019/03/21 09:00		
SERVICE REQUEST (rush - subject to availability)			Sampler's Name			Sampler's Signature			Mobile #			Date/Time		
Regular (default) X			Jared Cayenne						250-421-9457			March 21, 2019		
Priority (2-3 business days) - 50% surcharge														
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS														

12°C



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

Date Received: 23-MAR-19  
Report Date: 01-APR-19 18:20 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2248391  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190322  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2248391-1 WG 22-MAR-19 10:40 FR_MW- 1B_QTR_2019-01- 07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	790			
	Hardness (as CaCO3) (mg/L)	436			
	pH (pH)	7.96			
	ORP (mV)	445			
	Total Suspended Solids (mg/L)	1.8			
	Total Dissolved Solids (mg/L)	566	DLHC		
	Turbidity (NTU)	2.77			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	172			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	172			
	Ammonia as N (mg/L)	0.0116			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.73			
	Fluoride (F) (mg/L)	0.168			
	Ion Balance (%)	99.0			
	Nitrate (as N) (mg/L)	17.0			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.402	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0029			
	Phosphorus (P)-Total (mg/L)	0.0049			
	Sulfate (SO4) (mg/L)	202			
	Anion Sum (meq/L)	8.90			
	Cation Sum (meq/L)	8.81			
	Cation - Anion Balance (%)	-0.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.05			
	Total Organic Carbon (mg/L)	0.95			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00017			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.130			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2248391-1			
		WG			
		22-MAR-19			
		10:40			
		FR_MW- 1B_QTR_2019-01- 07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0158			
	Calcium (Ca)-Dissolved (mg/L)	105			
	Chromium (Cr)-Dissolved (mg/L)	0.00011			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0367			
	Magnesium (Mg)-Dissolved (mg/L)	42.4			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00101			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.17			
	Selenium (Se)-Dissolved (ug/L)	44.6			
	Silicon (Si)-Dissolved (mg/L)	1.66			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.77			
	Strontium (Sr)-Dissolved (mg/L)	0.171			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00249			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2248391-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2248391-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2248391-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2248391-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2248391-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2248391-1
Matrix Spike	Phosphorus (P)-Total	MS-B	L2248391-1

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

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

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

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

## Reference Information

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

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

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

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

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

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

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

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

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

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

### Chain of Custody Numbers:

20190322

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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





## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 1 of 9

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4587357							
<b>WG3017303-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.3		%		85-115	29-MAR-19
<b>WG3017303-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	29-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.9		%		85-115	29-MAR-19
<b>WG3017301-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4587422							
<b>WG3017146-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.5		%		80-120	29-MAR-19
<b>WG3017146-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Bromide (Br)			107.3		%		85-115	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Bromide (Br)			103.0		%		85-115	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Bromide (Br)			102.0		%		85-115	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4587852							
<b>WG3018065-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			92.0		%		80-120	31-MAR-19
<b>WG3018065-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4587852							
<b>WG3018065-2</b>	<b>LCS</b>							
Total Organic Carbon			94.0		%		80-120	31-MAR-19
<b>WG3018065-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Chloride (Cl)			104.8		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Chloride (Cl)			102.7		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Chloride (Cl)			101.3		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.9		%		90-110	29-MAR-19
<b>WG3017301-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4586335							
<b>WG3016346-2</b>	<b>LCS</b>							
Fluoride (F)			109.9		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Fluoride (F)			104.0		%		90-110	23-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Fluoride (F)			106.0		%		90-110	23-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-19



## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4586484</b>							
<b>WG3015964-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.9		%		80-120	28-MAR-19
<b>WG3015964-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-MAR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587422</b>							
<b>WG3017146-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.4		%		80-120	29-MAR-19
Antimony (Sb)-Dissolved			97.0		%		80-120	29-MAR-19
Arsenic (As)-Dissolved			98.8		%		80-120	29-MAR-19
Barium (Ba)-Dissolved			95.8		%		80-120	29-MAR-19
Bismuth (Bi)-Dissolved			101.3		%		80-120	29-MAR-19
Boron (B)-Dissolved			89.7		%		80-120	29-MAR-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	29-MAR-19
Calcium (Ca)-Dissolved			93.8		%		80-120	29-MAR-19
Chromium (Cr)-Dissolved			99.4		%		80-120	29-MAR-19
Cobalt (Co)-Dissolved			97.3		%		80-120	29-MAR-19
Copper (Cu)-Dissolved			98.4		%		80-120	29-MAR-19
Iron (Fe)-Dissolved			94.9		%		80-120	29-MAR-19
Lead (Pb)-Dissolved			102.9		%		80-120	29-MAR-19
Lithium (Li)-Dissolved			95.0		%		80-120	29-MAR-19
Magnesium (Mg)-Dissolved			100.6		%		80-120	29-MAR-19
Manganese (Mn)-Dissolved			100.1		%		80-120	29-MAR-19
Molybdenum (Mo)-Dissolved			92.1		%		80-120	29-MAR-19
Nickel (Ni)-Dissolved			95.3		%		80-120	29-MAR-19
Potassium (K)-Dissolved			99.9		%		80-120	29-MAR-19
Selenium (Se)-Dissolved			95.5		%		80-120	29-MAR-19
Silicon (Si)-Dissolved			89.6		%		60-140	29-MAR-19
Silver (Ag)-Dissolved			96.6		%		80-120	29-MAR-19
Sodium (Na)-Dissolved			105.5		%		80-120	29-MAR-19
Strontium (Sr)-Dissolved			95.6		%		80-120	29-MAR-19
Thallium (Tl)-Dissolved			99.6		%		80-120	29-MAR-19
Tin (Sn)-Dissolved			94.9		%		80-120	29-MAR-19
Titanium (Ti)-Dissolved			90.7		%		80-120	29-MAR-19
Uranium (U)-Dissolved			103.0		%		80-120	29-MAR-19



## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587422</b>							
<b>WG3017146-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			99.4		%		80-120	29-MAR-19
Zinc (Zn)-Dissolved			91.7		%		80-120	29-MAR-19
<b>WG3017146-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4588516</b>							
<b>WG3018743-2</b>	<b>LCS</b>							
Ammonia as N			106.2		%		85-115	01-APR-19
<b>WG3018743-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-APR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4586335</b>							
<b>WG3016346-2</b>	<b>LCS</b>							
Nitrite (as N)			105.2		%		90-110	23-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Nitrite (as N)			109.9		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Nitrite (as N)			107.2		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4586335</b>							
<b>WG3016346-2</b>	<b>LCS</b>							
Nitrate (as N)			104.3		%		90-110	24-MAR-19
<b>WG3016346-5</b>	<b>LCS</b>							
Nitrate (as N)			102.7		%		90-110	24-MAR-19
<b>WG3016346-9</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	24-MAR-19
<b>WG3016346-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>WG3016346-4</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>WG3016346-8</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAR-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4585058</b>							
<b>WG3014746-23</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	26-MAR-19
<b>WG3014746-24</b>	<b>DUP</b>	<b>L2248391-1</b>						
ORP		445	441	J	mV	4.5	15	26-MAR-19





## Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4588120</b>							
<b>WG3018295-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.2		%		75-125	29-MAR-19
<b>WG3018295-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.1		%		75-125	29-MAR-19
<b>WG3018295-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.1		%		75-125	29-MAR-19
<b>WG3018295-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	29-MAR-19
<b>WG3018295-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>WG3018295-10</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>WG3018295-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>WG3018295-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587643</b>							
<b>WG3017062-2</b>	<b>LCS</b>							
Total Suspended Solids			99.5		%		85-115	29-MAR-19
<b>WG3017062-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-MAR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4580368</b>							
<b>WG3013112-2</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	24-MAR-19
<b>WG3013112-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-MAR-19

# Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 8 of 9

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---



# Quality Control Report

Workorder: L2248391

Report Date: 01-APR-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	22-MAR-19 10:40	26-MAR-19 13:40	0.25	99	hours	EHTR-FM
pH	1	22-MAR-19 10:40	29-MAR-19 08:00	0.25	165	hours	EHTR-FM

## Legend & Qualifier Definitions:

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


### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2248391 were received on 23-MAR-19 09:10.

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

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

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

<b>COC ID:</b> 20190322-1202		<b>TURNAROUND TIME:</b>		<b>RUSH:</b>								
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>						
Facility Name / Job# Fording River Operation		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD				
Project Manager Neil MacDonald		Lab Contact Lyudmyln Shvets		Email 1: neil.macdonald@teck.com		X	X	X				
Email Neil.MacDonald@teck.com		Email Lyudmyln.Shvets@ALSGlobal.com		Email 2: dylan.begin@teck.com		X	X	X				
Address PO Box 100		Address 2559 29 Street NE		Email 3: chelsea.jensen@teck.com		X	X	X				
City Elkford		Province BC	City Calgary	Province AB	Email 4: jared.cayenne@teck.com		X	X	X			
Postal Code V0B 1H0		Country Canada	Postal Code T1Y 7B5	Country Canada	Email 5: scott.roughhead@teck.com		X	X	X			
Phone Number 1-250-865-5204		Phone Number 403 407 1794		Email 6: teckcoal@equisonline.com				X				
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>								
 L2248391-COFC  Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F F F N N H2SO4 HCl HNO3 NONE H2SO4 ALS_Package-DOC HG-D-CVAF-VA TECKCOAL-MET-D-VA TECKCOAL-ROUTINE-VA ALS_Package-TKN/TOC				
								FR_MW-1B_QTR_2019-01-07_N	FR_MW-1B	WG	2019/03/22	10:40
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>				<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCREDITED BY/AFFILIATION</b>		<b>DATE/TIME</b>		
				Jared Cayenne		March 22, 2019		Jared Cayenne		March 22, 2019		
								Elley 9:10 AM				
<b>SERVICE REQUEST (rush - subject to availability)</b>												
Regular (default) X				Sampler's Name		Jared Cayenne		Mobile #		250-421-9457		
Priority (2-3 business days) - 50% surcharge				Sampler's Signature				Date/Time		March 22, 2019		
Emergency (1 Business Day) - 100% surcharge												
For Emergency <1 Day, ASAP or Weekend - Contact ALS												

110



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 26-MAR-19  
Report Date: 02-APR-19 19:21 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2249360  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 4  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2249360-1	L2249360-2	L2249360-3
		Description	WG	WG	WG
		Sampled Date	25-MAR-19	25-MAR-19	25-MAR-19
		Sampled Time	11:00	10:55	12:59
		Client ID	FR_DC1_2019-03-25	FR_KB-3A_2019-03-25	FR_KB-3B_2019-03-25
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1880	1900	2090
	Hardness (as CaCO3) (mg/L)		1120	1130	1280
	pH (pH)		7.65	7.60	7.65
	ORP (mV)		469	424	416
	Total Suspended Solids (mg/L)		7.5	10.5	11.4
	Total Dissolved Solids (mg/L)		1560 <sup>DLHC</sup>	1600 <sup>DLHC</sup>	1760 <sup>DLHC</sup>
	Turbidity (NTU)		7.79	6.09	26.1
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		13.1	16.3	16.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		348	383	377
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		348	383	377
	Ammonia as N (mg/L)		0.0226	0.0228	0.0266
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)		<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)		<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>
	Ion Balance (%)		98.9	96.5	98.8
	Nitrate (as N) (mg/L)		64.3 <sup>DLHC</sup>	64.7 <sup>DLHC</sup>	76.7 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0079 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)		0.0019	0.0021	0.0021
	Phosphorus (P)-Total (mg/L)		0.0137	0.0150	0.0294
	Sulfate (SO4) (mg/L)		541 <sup>DLHC</sup>	547 <sup>DLHC</sup>	625 <sup>DLHC</sup>
	Anion Sum (meq/L)		22.8	23.7	26.0
	Cation Sum (meq/L)		22.6	22.8	25.7
	Cation - Anion Balance (%)		-0.5	-1.8	-0.6
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.76	1.19 <sup>DTC</sup>
Total Organic Carbon (mg/L)			0.71	0.63 <sup>DTC</sup>	0.77
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	0.00012
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0638	0.0628	0.0803
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2249360-1	L2249360-2	L2249360-3
		Description	WG	WG	WG
		Sampled Date	25-MAR-19	25-MAR-19	25-MAR-19
		Sampled Time	11:00	10:55	12:59
		Client ID	FR_DC1_2019-03-25	FR_KB-3A_2019-03-25	FR_KB-3B_2019-03-25
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.016	0.015	0.018
	Cadmium (Cd)-Dissolved (ug/L)		0.0316	0.0275	0.0343
	Calcium (Ca)-Dissolved (mg/L)		268	267	294
	Chromium (Cr)-Dissolved (mg/L)		0.00012	0.00017	0.00013
	Cobalt (Co)-Dissolved (ug/L)		2.76	2.75	0.89
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0349	0.0358	0.0616
	Magnesium (Mg)-Dissolved (mg/L)		109	112	131
	Manganese (Mn)-Dissolved (mg/L)		0.00550	0.00537	0.00329
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000267	0.000263	0.000443
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		2.06	2.08	3.17
	Selenium (Se)-Dissolved (ug/L)		241	244	297
	Silicon (Si)-Dissolved (mg/L)		3.07	3.14	2.55
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.95	4.02	3.67
	Strontium (Sr)-Dissolved (mg/L)		0.303	0.294	0.277
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00571	0.00575	0.00886
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0050	0.0052	0.0023

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

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Reference Information

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

**Chain of Custody Numbers:**

---

4

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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





## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588356</b>							
<b>WG3018528-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			94.4		%		85-115	01-APR-19
<b>WG3018528-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	01-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587296</b>							
<b>WG3017301-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.8		%		85-115	29-MAR-19
<b>WG3017301-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.9		%		80-120	28-MAR-19
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587103</b>							
<b>WG3017245-2</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588391</b>							
<b>WG3018647-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.6		%		80-120	01-APR-19
<b>WG3018647-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588391</b>							
<b>WG3018647-6</b>	<b>LCS</b>							
Total Organic Carbon			104.6		%		80-120	01-APR-19
<b>WG3018647-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-APR-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4587103</b>								
<b>WG3017245-2</b>	<b>LCS</b>							
Chloride (Cl)			98.2		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4587296</b>								
<b>WG3017301-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	29-MAR-19
<b>WG3017301-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAR-19
<b>F-IC-N-CL</b>								
<b>Batch R4587103</b>								
<b>WG3017245-2</b>	<b>LCS</b>							
Fluoride (F)			99.97		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-MAR-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4587597</b>								
<b>WG3017416-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.4		%		80-120	30-MAR-19
<b>WG3017416-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-MAR-19
<b>HG-T-CVAA-VA</b>								
<b>Batch R4587492</b>								
<b>WG3017644-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.7		%		80-120	29-MAR-19
<b>WG3017644-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4586798</b>								
<b>WG3016840-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.3		%		80-120	28-MAR-19
Antimony (Sb)-Dissolved			92.9		%		80-120	28-MAR-19
Arsenic (As)-Dissolved			98.0		%		80-120	28-MAR-19
Barium (Ba)-Dissolved			97.6		%		80-120	28-MAR-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	28-MAR-19
Boron (B)-Dissolved			98.0		%		80-120	28-MAR-19



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			100.4		%		80-120	28-MAR-19
Calcium (Ca)-Dissolved			97.0		%		80-120	28-MAR-19
Chromium (Cr)-Dissolved			100.7		%		80-120	28-MAR-19
Cobalt (Co)-Dissolved			97.7		%		80-120	28-MAR-19
Copper (Cu)-Dissolved			96.4		%		80-120	28-MAR-19
Iron (Fe)-Dissolved			95.5		%		80-120	28-MAR-19
Lead (Pb)-Dissolved			98.0		%		80-120	28-MAR-19
Lithium (Li)-Dissolved			99.7		%		80-120	28-MAR-19
Magnesium (Mg)-Dissolved			99.6		%		80-120	28-MAR-19
Manganese (Mn)-Dissolved			98.5		%		80-120	28-MAR-19
Molybdenum (Mo)-Dissolved			92.6		%		80-120	28-MAR-19
Nickel (Ni)-Dissolved			99.1		%		80-120	28-MAR-19
Potassium (K)-Dissolved			97.8		%		80-120	28-MAR-19
Selenium (Se)-Dissolved			90.9		%		80-120	28-MAR-19
Silicon (Si)-Dissolved			94.2		%		60-140	28-MAR-19
Silver (Ag)-Dissolved			97.4		%		80-120	28-MAR-19
Sodium (Na)-Dissolved			104.3		%		80-120	28-MAR-19
Strontium (Sr)-Dissolved			97.0		%		80-120	28-MAR-19
Thallium (Tl)-Dissolved			99.0		%		80-120	28-MAR-19
Tin (Sn)-Dissolved			96.7		%		80-120	28-MAR-19
Titanium (Ti)-Dissolved			88.3		%		80-120	28-MAR-19
Uranium (U)-Dissolved			106.1		%		80-120	28-MAR-19
Vanadium (V)-Dissolved			101.1		%		80-120	28-MAR-19
Zinc (Zn)-Dissolved			100.4		%		80-120	28-MAR-19
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589133</b>							
<b>WG3019552-2</b>	<b>LCS</b>							
Ammonia as N			112.3		%		85-115	02-APR-19
<b>WG3019552-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-APR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587103</b>							
<b>WG3017245-2</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Nitrate (as N)			98.6		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4587545							
<b>WG3017615-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	29-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4589156							
<b>WG3019346-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			112.1		%		80-120	02-APR-19
<b>WG3019346-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-APR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	29-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4586141							
<b>WG3016148-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.8		%		80-120	27-MAR-19
<b>WG3016148-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.6		%		80-120	27-MAR-19
<b>WG3016148-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-MAR-19
<b>WG3016148-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Sulfate (SO4)			98.1		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4589098							
<b>WG3018235-5</b>	<b>LCS</b>							
Total Dissolved Solids			101.1		%		85-115	01-APR-19
<b>WG3018235-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-APR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4588920							
<b>WG3019217-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.5		%		75-125	01-APR-19
<b>WG3019217-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.4		%		75-125	01-APR-19
<b>WG3019217-17</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.1		%		75-125	01-APR-19
<b>WG3019217-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.1		%		75-125	01-APR-19
<b>WG3019217-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.8		%		75-125	01-APR-19
<b>WG3019217-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-16</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4588984							
<b>WG3018262-16</b>	<b>LCS</b>							
Total Suspended Solids			95.4		%		85-115	01-APR-19
<b>WG3018262-15</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-APR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4586139							
<b>WG3015732-8</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	27-MAR-19
<b>WG3015732-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-MAR-19

# Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 7 of 8

## Legend:

---

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

# Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	25-MAR-19 11:00	29-MAR-19 14:20	0.25	99	hours	EHTR-FM
	2	25-MAR-19 10:55	29-MAR-19 14:20	0.25	99	hours	EHTR-FM
	3	25-MAR-19 12:59	29-MAR-19 14:20	0.25	97	hours	EHTR-FM
pH	1	25-MAR-19 11:00	29-MAR-19 14:00	0.25	99	hours	EHTR-FM
	2	25-MAR-19 10:55	29-MAR-19 14:00	0.25	99	hours	EHTR-FM
	3	25-MAR-19 12:59	29-MAR-19 14:00	0.25	97	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2249360 were received on 26-MAR-19 09:00.

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

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

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



COC ID: <b>4</b>		TURNAROUND TIME: Regular		RUSH:						
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Teck Coal Fording River Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets		Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE		Email 3:	Gregory.Jones@Golder.com		
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:		
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:		
Phone Number	1-604-831-3830			Phone Number	403 407 1794		PO number	VPO00617299		

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**



L2249360-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC	TECK COAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	TKN-F-L-CL
FR - OCL 2019-03-25	FR-DX1	WG		2019/03/25	11:00	G	6	1	1	1	1	1	1	1
<del>FR_KB-1-2019</del>	<del>FR_KB-2</del>	<del>WG</del>		<del>2019/03/25</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
FR_KB-3A_2019-03-25	FR_KB-3A	WG		2019/03/25	10:55	G	6	1	1	1	1	1	1	1
FR_KB-3B_2019-03-25	FR_KB-3B	WG		2019/03/25	12:59	G	6	1	1	1	1	1	1	1
<del>FR_CB-1A-2019</del>	<del>FR_CB-1A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_CB-1B-2019</del>	<del>FR_CB-1B</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_CB-1C-2019</del>	<del>FR_CB-1C</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_CB-2A-2019</del>	<del>FR_CB-2A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-1A-2019</del>	<del>FR_GCMW-1A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
<del>FR_GCMW-2A-2019</del>	<del>FR_GCMW-2A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	2019/3/26 0900

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Telev Fortin	Mobile #	250-464-5914		
Sampler's Signature	<i>[Signature]</i>	Date/Time	25 March 2019		

2°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 26-MAR-19  
Report Date: 02-APR-19 19:21 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2249360  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 4  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2249360-1	L2249360-2	L2249360-3
		Description	WG	WG	WG
		Sampled Date	25-MAR-19	25-MAR-19	25-MAR-19
		Sampled Time	11:00	10:55	12:59
		Client ID	FR_DC1_2019-03-25	FR_KB-3A_2019-03-25	FR_KB-3B_2019-03-25
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1880	1900	2090
	Hardness (as CaCO3) (mg/L)		1120	1130	1280
	pH (pH)		7.65	7.60	7.65
	ORP (mV)		469	424	416
	Total Suspended Solids (mg/L)		7.5	10.5	11.4
	Total Dissolved Solids (mg/L)		1560 <sup>DLHC</sup>	1600 <sup>DLHC</sup>	1760 <sup>DLHC</sup>
	Turbidity (NTU)		7.79	6.09	26.1
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		13.1	16.3	16.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		348	383	377
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		348	383	377
	Ammonia as N (mg/L)		0.0226	0.0228	0.0266
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)		<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)		<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>
	Ion Balance (%)		98.9	96.5	98.8
	Nitrate (as N) (mg/L)		64.3 <sup>DLHC</sup>	64.7 <sup>DLHC</sup>	76.7 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0079 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)		0.0019	0.0021	0.0021
	Phosphorus (P)-Total (mg/L)		0.0137	0.0150	0.0294
	Sulfate (SO4) (mg/L)		541 <sup>DLHC</sup>	547 <sup>DLHC</sup>	625 <sup>DLHC</sup>
	Anion Sum (meq/L)		22.8	23.7	26.0
	Cation Sum (meq/L)		22.6	22.8	25.7
	Cation - Anion Balance (%)		-0.5	-1.8	-0.6
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.76	1.19 <sup>DTC</sup>
Total Organic Carbon (mg/L)			0.71	0.63 <sup>DTC</sup>	0.77
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	0.00012
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0638	0.0628	0.0803
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2249360-1	L2249360-2	L2249360-3
		Description	WG	WG	WG
		Sampled Date	25-MAR-19	25-MAR-19	25-MAR-19
		Sampled Time	11:00	10:55	12:59
		Client ID	FR_DC1_2019-03-25	FR_KB-3A_2019-03-25	FR_KB-3B_2019-03-25
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.016	0.015	0.018
	Cadmium (Cd)-Dissolved (ug/L)		0.0316	0.0275	0.0343
	Calcium (Ca)-Dissolved (mg/L)		268	267	294
	Chromium (Cr)-Dissolved (mg/L)		0.00012	0.00017	0.00013
	Cobalt (Co)-Dissolved (ug/L)		2.76	2.75	0.89
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0349	0.0358	0.0616
	Magnesium (Mg)-Dissolved (mg/L)		109	112	131
	Manganese (Mn)-Dissolved (mg/L)		0.00550	0.00537	0.00329
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000267	0.000263	0.000443
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		2.06	2.08	3.17
	Selenium (Se)-Dissolved (ug/L)		241	244	297
	Silicon (Si)-Dissolved (mg/L)		3.07	3.14	2.55
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.95	4.02	3.67
	Strontium (Sr)-Dissolved (mg/L)		0.303	0.294	0.277
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00571	0.00575	0.00886
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0050	0.0052	0.0023

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

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Reference Information

**TURBIDITY-CL**                      Water                      Turbidity    APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

**Chain of Custody Numbers:**

---

4

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588356</b>							
<b>WG3018528-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			94.4		%		85-115	01-APR-19
<b>WG3018528-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	01-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587296</b>							
<b>WG3017301-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.8		%		85-115	29-MAR-19
<b>WG3017301-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.9		%		80-120	28-MAR-19
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587103</b>							
<b>WG3017245-2</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588391</b>							
<b>WG3018647-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.6		%		80-120	01-APR-19
<b>WG3018647-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588391</b>							
<b>WG3018647-6</b>	<b>LCS</b>							
Total Organic Carbon			104.6		%		80-120	01-APR-19
<b>WG3018647-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-APR-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Chloride (Cl)			98.2		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	29-MAR-19
<b>WG3017301-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Fluoride (F)			99.97		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4587597							
<b>WG3017416-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.4		%		80-120	30-MAR-19
<b>WG3017416-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-MAR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4587492							
<b>WG3017644-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.7		%		80-120	29-MAR-19
<b>WG3017644-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4586798							
<b>WG3016840-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.3		%		80-120	28-MAR-19
Antimony (Sb)-Dissolved			92.9		%		80-120	28-MAR-19
Arsenic (As)-Dissolved			98.0		%		80-120	28-MAR-19
Barium (Ba)-Dissolved			97.6		%		80-120	28-MAR-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	28-MAR-19
Boron (B)-Dissolved			98.0		%		80-120	28-MAR-19



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			100.4		%		80-120	28-MAR-19
Calcium (Ca)-Dissolved			97.0		%		80-120	28-MAR-19
Chromium (Cr)-Dissolved			100.7		%		80-120	28-MAR-19
Cobalt (Co)-Dissolved			97.7		%		80-120	28-MAR-19
Copper (Cu)-Dissolved			96.4		%		80-120	28-MAR-19
Iron (Fe)-Dissolved			95.5		%		80-120	28-MAR-19
Lead (Pb)-Dissolved			98.0		%		80-120	28-MAR-19
Lithium (Li)-Dissolved			99.7		%		80-120	28-MAR-19
Magnesium (Mg)-Dissolved			99.6		%		80-120	28-MAR-19
Manganese (Mn)-Dissolved			98.5		%		80-120	28-MAR-19
Molybdenum (Mo)-Dissolved			92.6		%		80-120	28-MAR-19
Nickel (Ni)-Dissolved			99.1		%		80-120	28-MAR-19
Potassium (K)-Dissolved			97.8		%		80-120	28-MAR-19
Selenium (Se)-Dissolved			90.9		%		80-120	28-MAR-19
Silicon (Si)-Dissolved			94.2		%		60-140	28-MAR-19
Silver (Ag)-Dissolved			97.4		%		80-120	28-MAR-19
Sodium (Na)-Dissolved			104.3		%		80-120	28-MAR-19
Strontium (Sr)-Dissolved			97.0		%		80-120	28-MAR-19
Thallium (Tl)-Dissolved			99.0		%		80-120	28-MAR-19
Tin (Sn)-Dissolved			96.7		%		80-120	28-MAR-19
Titanium (Ti)-Dissolved			88.3		%		80-120	28-MAR-19
Uranium (U)-Dissolved			106.1		%		80-120	28-MAR-19
Vanadium (V)-Dissolved			101.1		%		80-120	28-MAR-19
Zinc (Zn)-Dissolved			100.4		%		80-120	28-MAR-19
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586798</b>							
<b>WG3016840-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589133</b>							
<b>WG3019552-2</b>	<b>LCS</b>							
Ammonia as N			112.3		%		85-115	02-APR-19
<b>WG3019552-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-APR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587103</b>							
<b>WG3017245-2</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Nitrate (as N)			98.6		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4587545							
<b>WG3017615-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	29-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4589156							
<b>WG3019346-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			112.1		%		80-120	02-APR-19
<b>WG3019346-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-APR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	29-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4586141							
<b>WG3016148-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.8		%		80-120	27-MAR-19
<b>WG3016148-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.6		%		80-120	27-MAR-19
<b>WG3016148-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-MAR-19
<b>WG3016148-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2</b>	<b>LCS</b>							
Sulfate (SO4)			98.1		%		90-110	28-MAR-19
<b>WG3017245-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4589098							
<b>WG3018235-5</b>	<b>LCS</b>							
Total Dissolved Solids			101.1		%		85-115	01-APR-19
<b>WG3018235-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-APR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4588920							
<b>WG3019217-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.5		%		75-125	01-APR-19
<b>WG3019217-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.4		%		75-125	01-APR-19
<b>WG3019217-17</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.1		%		75-125	01-APR-19
<b>WG3019217-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.1		%		75-125	01-APR-19
<b>WG3019217-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.8		%		75-125	01-APR-19
<b>WG3019217-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-16</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4588984							
<b>WG3018262-16</b>	<b>LCS</b>							
Total Suspended Solids			95.4		%		85-115	01-APR-19
<b>WG3018262-15</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-APR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4586139							
<b>WG3015732-8</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	27-MAR-19
<b>WG3015732-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-MAR-19

# Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 7 of 8

## Legend:

---

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

# Quality Control Report

Workorder: L2249360

Report Date: 02-APR-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	25-MAR-19 11:00	29-MAR-19 14:20	0.25	99	hours	EHTR-FM
	2	25-MAR-19 10:55	29-MAR-19 14:20	0.25	99	hours	EHTR-FM
	3	25-MAR-19 12:59	29-MAR-19 14:20	0.25	97	hours	EHTR-FM
pH	1	25-MAR-19 11:00	29-MAR-19 14:00	0.25	99	hours	EHTR-FM
	2	25-MAR-19 10:55	29-MAR-19 14:00	0.25	99	hours	EHTR-FM
	3	25-MAR-19 12:59	29-MAR-19 14:00	0.25	97	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2249360 were received on 26-MAR-19 09:00.

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

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

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

COC ID: <b>4</b>		TURNAROUND TIME: Regular		RUSH:					
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO			
Facility Name / Job#	Teck Coal Fording River Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate		Lab Contact	Lyudmyla Shvets		Email 1:	X	X	X
Email	Leilah.Tate@teck.com		Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.		Address	2559 29 Street NE		Email 3:	Gregory.Jones@Golder.com		
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	
Phone Number	1-604-831-3830		Phone Number	403 407 1794		PO number	VPO00617299		

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC	TECK COAL - MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	TKN-F-L-CL	Filtered: F: Field, LI: Lab, FLI: Field & Lab, N: None					
							PREP	N	F	N	F	F	N							
FR - OCL 2019-03-25	FR-DX1	WG		2019/03/25	11:00	G	6	1	1	1	1	1	1	1						
<del>FR_KB-1-2019</del>	<del>FR_KB-2</del>	<del>WG</del>		<del>2019/03/25</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
FR_KB-3A_2019-03-25	FR_KB-3A	WG		2019/03/25	10:55	G	6	1	1	1	1	1	1	1						
FR_KB-3B_2019-03-25	FR_KB-3B	WG		2019/03/25	12:59	G	6	1	1	1	1	1	1	1						
<del>FR_CB-1A-2019</del>	<del>FR_CB-1A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_CB-1B-2019</del>	<del>FR_CB-1B</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_CB-1C-2019</del>	<del>FR_CB-1C</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_CB-2A-2019</del>	<del>FR_CB-2A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_GCMW-1A-2019</del>	<del>FR_GCMW-1A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						
<del>FR_GCMW-2A-2019</del>	<del>FR_GCMW-2A</del>	<del>WG</del>		<del>---</del>	<del>00:00</del>	<del>G</del>		<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	2019/3/26 0900

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>	
Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	Telev Fortin	Mobile #	250-464-5914
Sampler's Signature	<i>[Signature]</i>	Date/Time	25 March 2019

2°C





TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 27-MAR-19  
Report Date: 05-APR-19 11:10 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2249672  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: #5  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2249672-1 WG 26-MAR-19 13:57 FR_TB-1B_2019-03-26	L2249672-2 WG 26-MAR-19 11:50 FR_TBSSMW-1_2019-03-26	L2249672-3 WG 26-MAR-19 13:02 FR_TBSSMW-2_2019-03-26			
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	606	361	658		
	Hardness (as CaCO3) (mg/L)	330	148	354		
	pH (pH)	8.11	8.26	8.08		
	ORP (mV)	454	426	412		
	Total Suspended Solids (mg/L)	1.1 <sup>HTD</sup>	21.1 <sup>HTD</sup>	<1.0 <sup>HTD</sup>		
	Total Dissolved Solids (mg/L)	413 <sup>DLHC</sup>	181 <sup>DLHC</sup>	457 <sup>DLHC</sup>		
	Turbidity (NTU)	0.92	24.9	0.94		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.9	<1.0	2.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	139	176	140		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	139	176 <sup>DLHC</sup>	140		
	Ammonia as N (mg/L)	0.0119	2.57 <sup>DLHC</sup>	0.0119		
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050		
	Chloride (Cl) (mg/L)	<0.50	0.70	<0.50		
	Fluoride (F) (mg/L)	0.218	0.433	0.229		
	Ion Balance (%)	98.7	94.5	98.8		
	Nitrate (as N) (mg/L)	4.86	<0.0050	5.25		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.398 <sup>TKNI</sup>	2.96	0.357 <sup>TKNI</sup>		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0025	0.0016		
	Phosphorus (P)-Total (mg/L)	0.0023	0.0279	0.0023		
	Sulfate (SO4) (mg/L)	173	21.4	193		
	Anion Sum (meq/L)	6.73	4.01	7.21		
	Cation Sum (meq/L)	6.64	3.79	7.12		
	Cation - Anion Balance (%)	-0.6	-2.8	-0.6		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.67	0.88	1.44 <sup>DTC</sup>		
	Total Organic Carbon (mg/L)	0.60	1.75 <sup>DLM</sup>	1.11 <sup>DTC</sup>		
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00132	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0647	1.76	0.0848		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020		

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2249672-1	L2249672-2	L2249672-3
		Description	WG	WG	WG
		Sampled Date	26-MAR-19	26-MAR-19	26-MAR-19
		Sampled Time	13:57	11:50	13:02
		Client ID	FR_TB-1B_2019-03-26	FR_TBSSMW-1_2019-03-26	FR_TBSSMW-2_2019-03-26
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	0.016	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0123	<0.0050	0.0102
	Calcium (Ca)-Dissolved (mg/L)		82.5	13.7	88.1
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.128	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0079	0.197	0.0089
	Magnesium (Mg)-Dissolved (mg/L)		30.1	27.7	32.5
	Manganese (Mn)-Dissolved (mg/L)		0.00014	0.0439	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000743	0.0147	0.000866
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		0.712	6.68	0.714
	Selenium (Se)-Dissolved (ug/L)		28.9	<0.050	32.4
	Silicon (Si)-Dissolved (mg/L)		1.41	2.27	1.38
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.722	14.8	0.753
	Strontium (Sr)-Dissolved (mg/L)		0.137	0.239	0.158
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00124	0.000213	0.00140
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0012	<0.0010

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2249672-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2249672-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

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

## Reference Information

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

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

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

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

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

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

## Reference Information

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

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

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

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

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

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

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

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

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

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

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

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

---

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

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

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

---

### Chain of Custody Numbers:

#5

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4589092							
<b>WG3019383-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.1		%		85-115	02-APR-19
<b>WG3019383-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	02-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4588394							
<b>WG3018523-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.3		%		85-115	01-APR-19
<b>WG3018523-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-APR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4587478							
<b>WG3016836-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.5		%		80-120	29-MAR-19
<b>WG3016836-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-21</b>	<b>LCS</b>							
Bromide (Br)			98.7		%		85-115	29-MAR-19
<b>WG3017245-20</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4589417							
<b>WG3019942-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.8		%		80-120	02-APR-19
<b>WG3019942-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019942-4</b>	<b>MS</b>	<b>L2249672-2</b>						
Dissolved Organic Carbon			94.7		%		70-130	02-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4589417							
<b>WG3019942-2</b>	<b>LCS</b>							
Total Organic Carbon			96.1		%		80-120	02-APR-19
<b>WG3019942-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019942-4</b>	<b>MS</b>	<b>L2249672-2</b>						



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch R4589417								
<b>WG3019942-4 MS</b>		<b>L2249672-2</b>						
Total Organic Carbon			96.2		%		70-130	02-APR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch R4587103								
<b>WG3017245-21 LCS</b>								
Chloride (Cl)			101.2		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	29-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch R4588394								
<b>WG3018523-11 LCS</b>								
Conductivity (@ 25C)			99.3		%		90-110	01-APR-19
<b>WG3018523-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-APR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch R4587103								
<b>WG3017245-21 LCS</b>								
Fluoride (F)			103.6		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	29-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch R4587597								
<b>WG3017416-2 LCS</b>								
Mercury (Hg)-Dissolved			95.4		%		80-120	30-MAR-19
<b>WG3017416-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-MAR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch R4587492								
<b>WG3017644-2 LCS</b>								
Mercury (Hg)-Total			101.7		%		80-120	29-MAR-19
<b>WG3017644-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587478</b>							
<b>WG3016836-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.3		%		80-120	29-MAR-19
Antimony (Sb)-Dissolved			101.8		%		80-120	29-MAR-19
Arsenic (As)-Dissolved			100.6		%		80-120	29-MAR-19
Barium (Ba)-Dissolved			106.5		%		80-120	29-MAR-19
Bismuth (Bi)-Dissolved			100.2		%		80-120	29-MAR-19
Boron (B)-Dissolved			94.1		%		80-120	29-MAR-19
Cadmium (Cd)-Dissolved			98.5		%		80-120	29-MAR-19
Calcium (Ca)-Dissolved			95.6		%		80-120	29-MAR-19
Chromium (Cr)-Dissolved			98.2		%		80-120	29-MAR-19
Cobalt (Co)-Dissolved			96.9		%		80-120	29-MAR-19
Copper (Cu)-Dissolved			97.4		%		80-120	29-MAR-19
Iron (Fe)-Dissolved			87.6		%		80-120	29-MAR-19
Lead (Pb)-Dissolved			103.8		%		80-120	29-MAR-19
Lithium (Li)-Dissolved			93.0		%		80-120	29-MAR-19
Magnesium (Mg)-Dissolved			98.7		%		80-120	29-MAR-19
Manganese (Mn)-Dissolved			96.4		%		80-120	29-MAR-19
Molybdenum (Mo)-Dissolved			104.9		%		80-120	29-MAR-19
Nickel (Ni)-Dissolved			97.2		%		80-120	29-MAR-19
Potassium (K)-Dissolved			96.2		%		80-120	29-MAR-19
Selenium (Se)-Dissolved			95.4		%		80-120	29-MAR-19
Silicon (Si)-Dissolved			94.0		%		60-140	29-MAR-19
Silver (Ag)-Dissolved			103.8		%		80-120	29-MAR-19
Sodium (Na)-Dissolved			98.8		%		80-120	29-MAR-19
Strontium (Sr)-Dissolved			103.0		%		80-120	29-MAR-19
Thallium (Tl)-Dissolved			101.7		%		80-120	29-MAR-19
Tin (Sn)-Dissolved			96.0		%		80-120	29-MAR-19
Titanium (Ti)-Dissolved			90.5		%		80-120	29-MAR-19
Uranium (U)-Dissolved			98.8		%		80-120	29-MAR-19
Vanadium (V)-Dissolved			98.4		%		80-120	29-MAR-19
Zinc (Zn)-Dissolved			108.0		%		80-120	29-MAR-19
<b>WG3016836-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587478</b>							
<b>WG3016836-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589133</b>							
<b>WG3019552-2</b>	<b>LCS</b>							
Ammonia as N			112.3		%		85-115	02-APR-19
<b>WG3019552-4</b>	<b>LCS</b>							
Ammonia as N			98.5		%		85-115	02-APR-19
<b>WG3019552-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-APR-19



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch R4589133								
<b>WG3019552-3 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	02-APR-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch R4587103								
<b>WG3017245-21 LCS</b>								
Nitrite (as N)			106.7		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAR-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch R4587103								
<b>WG3017245-21 LCS</b>								
Nitrate (as N)			100.9		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch R4588349								
<b>WG3018610-3 CRM</b>		<b>CL-ORP</b>						
ORP			224		mV		210-230	01-APR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R4589156								
<b>WG3019346-10 LCS</b>								
Phosphorus (P)-Total			107.6		%		80-120	02-APR-19
<b>WG3019346-9 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-APR-19
<b>PH-CL</b>	<b>Water</b>							
Batch R4588394								
<b>WG3018523-11 LCS</b>								
pH			6.99		pH		6.9-7.1	01-APR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R4586807								
<b>WG3016552-2 LCS</b>								
Orthophosphate-Dissolved (as P)			100.0		%		80-120	28-MAR-19
<b>WG3016552-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-MAR-19



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-21 LCS</b>								
Sulfate (SO4)			102.3		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4589098							
<b>WG3018235-8 LCS</b>								
Total Dissolved Solids			104.3		%		85-115	01-APR-19
<b>WG3018235-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-APR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4588920							
<b>WG3019217-10 LCS</b>								
Total Kjeldahl Nitrogen			92.5		%		75-125	01-APR-19
<b>WG3019217-14 LCS</b>								
Total Kjeldahl Nitrogen			99.4		%		75-125	01-APR-19
<b>WG3019217-17 LCS</b>								
Total Kjeldahl Nitrogen			96.1		%		75-125	01-APR-19
<b>WG3019217-2 LCS</b>								
Total Kjeldahl Nitrogen			95.1		%		75-125	01-APR-19
<b>WG3019217-6 LCS</b>								
Total Kjeldahl Nitrogen			92.8		%		75-125	01-APR-19
<b>WG3019217-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-16 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4590295							
<b>WG3019060-2 LCS</b>								
Total Suspended Solids			97.7		%		85-115	03-APR-19
<b>WG3019060-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-APR-19



## Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4586678</b>							
<b>WG3016737-2</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	28-MAR-19
<b>WG3016737-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-MAR-19

# Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 8 of 9

## Legend:

---

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

# Quality Control Report

Workorder: L2249672

Report Date: 05-APR-19

Page 9 of 9

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-MAR-19 13:57	01-APR-19 09:15	0.25	139	hours	EHTR-FM
	2	26-MAR-19 11:50	01-APR-19 09:15	0.25	141	hours	EHTR-FM
	3	26-MAR-19 13:02	01-APR-19 09:15	0.25	140	hours	EHTR-FM
Total Suspended Solids	1	26-MAR-19 13:57	03-APR-19 14:30	7	8	days	EHT
	2	26-MAR-19 11:50	03-APR-19 14:30	7	8	days	EHT
	3	26-MAR-19 13:02	03-APR-19 14:30	7	8	days	EHT
pH	1	26-MAR-19 13:57	01-APR-19 09:00	0.25	139	hours	EHTR-FM
	2	26-MAR-19 11:50	01-APR-19 09:00	0.25	141	hours	EHTR-FM
	3	26-MAR-19 13:02	01-APR-19 09:00	0.25	140	hours	EHTR-FM

**Legend & Qualifier Definitions:**

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

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2249672 were received on 27-MAR-19 10:00.

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

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

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

COC ID: #5      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:			
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00617299		

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
		WG												
FR_TB-1B_2019-03-26	FR_TB-1B	WG	NO	2019/03/26		G	6	1	1	1	1	1	1	
FR_TBSSMW-1_2019-03-26	FR_TBSSMW-1	WG	NO	2019/03/26		G	6	1	1	1	1	1	1	
FR_TBSSMW-2_2019-03-26	FR_TBSSMW-2	WG	NO	2019/03/26		G	6	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS: Please add TKN to analysis.

RELINQUISHED BY/AFFILIATION: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

ACCEPTED BY/AFFILIATION: DLK DATE/TIME: 2019/3/27 0900

SERVICE REQUEST (rush - subject to availability)

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

Sampler's Name: Tyler Fortin      Mobile #: 250-464-8914

Sampler's Signature: *[Signature]*      Date/Time: 26 March 2019

40C





TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 28-MAR-19  
Report Date: 06-APR-19 13:24 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2250608  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: #6  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2250608-2 WG 27-MAR-19 11:16 FR_GCMW- 1B_2019-03-27	L2250608-3 WG 27-MAR-19 12:39 FR_GCMW- 1A_2019-03-27		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	751	651		
	Hardness (as CaCO3) (mg/L)	84.3	24.9		
	pH (pH)	8.38	8.42		
	ORP (mV)	358	344		
	Total Suspended Solids (mg/L)	23.4	9.7		
	Total Dissolved Solids (mg/L)	464 <sup>DLHC</sup>	397 <sup>DLHC</sup>		
	Turbidity (NTU)	26.1	21.2		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	353	329		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	8.2	8.8		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	361	338		
	Ammonia as N (mg/L)	0.157	0.130		
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)	10.6 <sup>DLHC</sup>	15.9 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)	1.09 <sup>DLHC</sup>	1.85 <sup>DLHC</sup>		
	Ion Balance (%)	100	97.4		
	Nitrate (as N) (mg/L)	<0.025 <sup>DLHC</sup>	<0.025 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)	0.130 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)	0.483	0.530		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0067	0.0488		
	Phosphorus (P)-Total (mg/L)	0.0402	0.0935		
	Sulfate (SO4) (mg/L)	29.5 <sup>DLHC</sup>	<1.5 <sup>DLHC</sup>		
	Anion Sum (meq/L)	8.20	7.29		
	Cation Sum (meq/L)	8.21	7.11		
	Cation - Anion Balance (%)	0.1	-1.3		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	6.53	2.96		
	Total Organic Carbon (mg/L)	7.60	2.87		
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0256	0.0043		
	Antimony (Sb)-Dissolved (mg/L)	0.00022	0.00012		
	Arsenic (As)-Dissolved (mg/L)	0.00106	0.00208		
	Barium (Ba)-Dissolved (mg/L)	0.101	0.0617		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2250608-2 WG 27-MAR-19 11:16 FR_GCMW- 1B_2019-03-27	L2250608-3 WG 27-MAR-19 12:39 FR_GCMW- 1A_2019-03-27		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.088	0.187		
	Cadmium (Cd)-Dissolved (ug/L)	0.0119	0.0139		
	Calcium (Ca)-Dissolved (mg/L)	23.1	6.67		
	Chromium (Cr)-Dissolved (mg/L)	0.00011	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.19	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00040	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.022		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.158	0.266		
	Magnesium (Mg)-Dissolved (mg/L)	6.47	2.02		
	Manganese (Mn)-Dissolved (mg/L)	0.0737	0.0355		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0273	0.0365		
	Nickel (Ni)-Dissolved (mg/L)	0.00261	0.00061		
	Potassium (K)-Dissolved (mg/L)	1.94	1.32		
	Selenium (Se)-Dissolved (ug/L)	2.85	0.320		
	Silicon (Si)-Dissolved (mg/L)	3.60	3.14		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	149	151		
	Strontium (Sr)-Dissolved (mg/L)	0.220	0.0932		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00231	0.000560		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0020	<0.0010		

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2250608-2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2250608-2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2250608-2, -3

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

## Reference Information

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

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

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

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

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

---

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

---

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

---

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

---

### Chain of Custody Numbers:

#6

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589933</b>							
<b>WG3020254-12 DUP</b>		<b>L2250608-3</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	03-APR-19
<b>WG3020254-11 LCS</b>								
Acidity (as CaCO3)			109.2		%		85-115	03-APR-19
<b>WG3020254-5 LCS</b>								
Acidity (as CaCO3)			100.6		%		85-115	03-APR-19
<b>WG3020254-10 MB</b>								
Acidity (as CaCO3)			1.9		mg/L		2	03-APR-19
<b>WG3020254-4 MB</b>								
Acidity (as CaCO3)			2.0		mg/L		2	03-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589102</b>							
<b>WG3019394-11 LCS</b>								
Alkalinity, Total (as CaCO3)			94.9		%		85-115	02-APR-19
<b>WG3019394-14 LCS</b>								
Alkalinity, Total (as CaCO3)			95.4		%		85-115	02-APR-19
<b>WG3019394-10 MB</b>								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-APR-19
<b>WG3019394-13 MB</b>								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-APR-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-2 LCS</b>		<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.2		%		80-120	02-APR-19
<b>WG3019429-6 LCS</b>		<b>TMRM</b>						
Beryllium (Be)-Dissolved			93.3		%		80-120	02-APR-19
<b>WG3019429-1 MB</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-APR-19
<b>WG3019429-5 MB</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-APR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587103</b>							
<b>WG3017245-22 DUP</b>		<b>L2250608-3</b>						
Bromide (Br)		<0.25	0.061	J	mg/L	0.019	0.5	29-MAR-19
<b>WG3017245-21 LCS</b>								
Bromide (Br)			98.7		%		85-115	29-MAR-19
<b>WG3017245-20 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	29-MAR-19



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4590261							
<b>WG3020858-2 LCS</b>								
Dissolved Organic Carbon			103.0		%		80-120	03-APR-19
<b>WG3020858-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-APR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4590261							
<b>WG3020858-2 LCS</b>								
Total Organic Carbon			109.6		%		80-120	03-APR-19
<b>WG3020858-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	03-APR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-22 DUP</b>		<b>L2250608-3</b>						
Chloride (Cl)		15.9	15.8		mg/L	0.4	20	29-MAR-19
<b>WG3017245-21 LCS</b>								
Chloride (Cl)			101.2		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	29-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4589102							
<b>WG3019394-11 LCS</b>								
Conductivity (@ 25C)			100.3		%		90-110	02-APR-19
<b>WG3019394-14 LCS</b>								
Conductivity (@ 25C)			102.5		%		90-110	02-APR-19
<b>WG3019394-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-APR-19
<b>WG3019394-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-APR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-22 DUP</b>		<b>L2250608-3</b>						
Fluoride (F)		1.85	1.80		mg/L	2.6	20	29-MAR-19
<b>WG3017245-21 LCS</b>								
Fluoride (F)			103.6		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	29-MAR-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589758</b>							
<b>WG3020255-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.7		%		80-120	03-APR-19
<b>WG3020255-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-APR-19
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589758</b>							
<b>WG3020256-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.9		%		80-120	03-APR-19
<b>WG3020256-6</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.4		%		80-120	03-APR-19
<b>WG3020256-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	03-APR-19
<b>WG3020256-5</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	03-APR-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.3		%		80-120	02-APR-19
Antimony (Sb)-Dissolved			95.7		%		80-120	02-APR-19
Arsenic (As)-Dissolved			99.5		%		80-120	02-APR-19
Barium (Ba)-Dissolved			103.4		%		80-120	02-APR-19
Bismuth (Bi)-Dissolved			98.4		%		80-120	02-APR-19
Boron (B)-Dissolved			99.3		%		80-120	02-APR-19
Cadmium (Cd)-Dissolved			97.3		%		80-120	02-APR-19
Calcium (Ca)-Dissolved			96.4		%		80-120	02-APR-19
Chromium (Cr)-Dissolved			101.7		%		80-120	02-APR-19
Cobalt (Co)-Dissolved			100.5		%		80-120	02-APR-19
Copper (Cu)-Dissolved			99.8		%		80-120	02-APR-19
Iron (Fe)-Dissolved			101.9		%		80-120	02-APR-19
Lead (Pb)-Dissolved			99.6		%		80-120	02-APR-19
Lithium (Li)-Dissolved			104.8		%		80-120	02-APR-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	02-APR-19
Manganese (Mn)-Dissolved			102.5		%		80-120	02-APR-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	02-APR-19
Nickel (Ni)-Dissolved			100.1		%		80-120	02-APR-19
Potassium (K)-Dissolved			104.9		%		80-120	02-APR-19



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-2</b>	<b>LCS</b>	<b>TMRM</b>						
Selenium (Se)-Dissolved			96.0		%		80-120	02-APR-19
Silicon (Si)-Dissolved			106.0		%		60-140	02-APR-19
Silver (Ag)-Dissolved			102.3		%		80-120	02-APR-19
Sodium (Na)-Dissolved			103.3		%		80-120	02-APR-19
Strontium (Sr)-Dissolved			95.4		%		80-120	02-APR-19
Thallium (Tl)-Dissolved			95.6		%		80-120	02-APR-19
Tin (Sn)-Dissolved			99.96		%		80-120	02-APR-19
Titanium (Ti)-Dissolved			102.2		%		80-120	02-APR-19
Uranium (U)-Dissolved			96.5		%		80-120	02-APR-19
Vanadium (V)-Dissolved			103.0		%		80-120	02-APR-19
Zinc (Zn)-Dissolved			102.0		%		80-120	02-APR-19
<b>WG3019429-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.2		%		80-120	02-APR-19
Antimony (Sb)-Dissolved			95.3		%		80-120	02-APR-19
Arsenic (As)-Dissolved			99.2		%		80-120	02-APR-19
Barium (Ba)-Dissolved			102.2		%		80-120	02-APR-19
Bismuth (Bi)-Dissolved			97.1		%		80-120	02-APR-19
Boron (B)-Dissolved			96.2		%		80-120	02-APR-19
Cadmium (Cd)-Dissolved			101.3		%		80-120	02-APR-19
Calcium (Ca)-Dissolved			98.1		%		80-120	02-APR-19
Chromium (Cr)-Dissolved			101.6		%		80-120	02-APR-19
Cobalt (Co)-Dissolved			99.8		%		80-120	02-APR-19
Copper (Cu)-Dissolved			99.4		%		80-120	02-APR-19
Iron (Fe)-Dissolved			101.4		%		80-120	02-APR-19
Lead (Pb)-Dissolved			97.8		%		80-120	02-APR-19
Lithium (Li)-Dissolved			99.5		%		80-120	02-APR-19
Magnesium (Mg)-Dissolved			99.4		%		80-120	02-APR-19
Manganese (Mn)-Dissolved			102.2		%		80-120	02-APR-19
Molybdenum (Mo)-Dissolved			102.9		%		80-120	02-APR-19
Nickel (Ni)-Dissolved			98.8		%		80-120	02-APR-19
Potassium (K)-Dissolved			102.2		%		80-120	02-APR-19
Selenium (Se)-Dissolved			94.3		%		80-120	02-APR-19
Silicon (Si)-Dissolved			105.0		%		60-140	02-APR-19
Silver (Ag)-Dissolved			103.2		%		80-120	02-APR-19



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-6</b>	<b>LCS</b>	<b>TMRM</b>						
Sodium (Na)-Dissolved			97.9		%		80-120	02-APR-19
Strontium (Sr)-Dissolved			99.1		%		80-120	02-APR-19
Thallium (Tl)-Dissolved			98.1		%		80-120	02-APR-19
Tin (Sn)-Dissolved			104.1		%		80-120	02-APR-19
Titanium (Ti)-Dissolved			99.96		%		80-120	02-APR-19
Uranium (U)-Dissolved			99.2		%		80-120	02-APR-19
Vanadium (V)-Dissolved			100.9		%		80-120	02-APR-19
Zinc (Zn)-Dissolved			100.4		%		80-120	02-APR-19
<b>WG3019429-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-1</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
<b>WG3019429-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19



## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
Batch	R4589078							
<b>WG3019429-5 MB</b>								
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4590644							
<b>WG3021264-2 LCS</b>								
Ammonia as N			112.1		%		85-115	04-APR-19
<b>WG3021264-1 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	04-APR-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-22 DUP</b>		<b>L2250608-3</b>						
Nitrite (as N)		<0.0050	<0.0010	RPD-NA	mg/L	N/A	20	29-MAR-19
<b>WG3017245-21 LCS</b>								
Nitrite (as N)			106.7		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAR-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-22 DUP</b>		<b>L2250608-3</b>						
Nitrate (as N)		<0.025	0.0207		mg/L	0.0	20	29-MAR-19
<b>WG3017245-21 LCS</b>								
Nitrate (as N)			100.9		%		90-110	29-MAR-19
<b>WG3017245-20 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4589353							
<b>WG3019535-5 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	02-APR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4591125							
<b>WG3021736-22 LCS</b>								
Phosphorus (P)-Total			105.7		%		80-120	04-APR-19
<b>WG3021736-21 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-APR-19
<b>PH-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4590673							
<b>WG3020419-8 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-APR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4590298							
<b>WG3020004-12 LCS</b>								
Total Suspended Solids			100.0		%		85-115	03-APR-19
<b>WG3020004-11 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-APR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4587546							
<b>WG3017616-12 DUP</b>		<b>L2250608-3</b>						
Turbidity		21.2	21.0		NTU	0.9	15	29-MAR-19
<b>WG3017616-11 LCS</b>								
Turbidity			98.5		%		85-115	29-MAR-19
<b>WG3017616-10 MB</b>								
Turbidity			<0.10		NTU		0.1	29-MAR-19

# Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 10 of 11

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---



# Quality Control Report

Workorder: L2250608

Report Date: 06-APR-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	2	27-MAR-19 11:16	02-APR-19 09:15	0.25	142	hours	EHTR-FM
	3	27-MAR-19 12:39	02-APR-19 09:15	0.25	141	hours	EHTR-FM
pH	2	27-MAR-19 11:16	02-APR-19 09:00	0.25	142	hours	EHTR-FM
	3	27-MAR-19 12:39	02-APR-19 09:00	0.25	140	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2250608 were received on 28-MAR-19 08:50.

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

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

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

COC ID: #6		TURNAROUND TIME:				RUSH:				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>		
Facility Name / Job# Teck Coal Fording River Operations		Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD		
Project Manager Leilah Tate		Lab Contact Lyudmyla Shvets		Email 1:		X	X	X		
Email Leilah.Tate@teck.com		Email Lyudmyla.Shvets@ALSGlobal.com		Email 2:		X	X	X		
Address Suite 1000, 205 - 9th Ave S.E.		Address 2559 29 Street NE		Email 3:		gregory.jones@egsincider.com				
City Calgary		Province AB	City Calgary		Province AB					
Postal Code T2G 0R3		Country Canada	Postal Code T1Y 7B5		Country Canada					
Phone Number 1-604-831-3830		Phone Number 403 407 1794		PO number		VPO00617299				

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	NO <sub>3</sub> <sup>-</sup>	NO <sub>2</sub> <sup>-</sup>	NO <sub>3</sub> <sup>-</sup>	NO <sub>2</sub> <sup>-</sup>	NO <sub>3</sub> <sup>-</sup>	NO <sub>2</sub> <sup>-</sup>	NO <sub>3</sub> <sup>-</sup>	NO <sub>2</sub> <sup>-</sup>
FR-GCMW-2-2019-03-27	FR-GCMW-2	WG		2019/03/27	9:24	G	6	TECK COAL ROUTINE-CL	-	-	-	-	-	-	-	-
FR-GCMW-1B-2019-03-27	FR-GCMW-1B	WG		"	11:14	G	6	TECK COAL DOC	-	-	-	-	-	-	-	-
FR-GCMW-1A-2019-03-27	FR-GCMW-1A	WG		"	12:39	G	6	TECK COAL TOC/TKN	-	-	-	-	-	-	-	-
FR-CB-2A-2019-03-27	FR-CB-2A	WG		"	14:58	G	6	TECK COAL MET D-CL	-	-	-	-	-	-	-	-
* PLEASE HOLD FR-GCMW-2 and FR-CB-2A FOR ANALYSIS.																

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
All samples field filtered + preserved as required. Please run TKN on samples						[Signature]		3/28/19	

SERVICE REQUEST (rush - subject to availability)		Sampler's Name		Mobile #	
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Tyler Fortin		250-464-5914	
		Sampler's Signature		Date/Time	
		[Signature]		2019/03/27	



SNC-Lavalin  
ATTN: Brian Hansen  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 29-MAR-19  
Report Date: 08-APR-19 16:16 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2251134  
Project P.O. #: SSGMP  
Job Reference: 659534  
C of C Numbers: 19-SK1-190328  
Legal Site Desc:

Ryan Smyth, B.A.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2251134-1	L2251134-2	L2251134-3		
		Description	WATER	WATER	WATER		
		Sampled Date	28-MAR-19	28-MAR-19	28-MAR-19		
		Sampled Time	10:00	14:45	09:40		
		Client ID	FR_MW_SK1- C_WG_Q1_2019_ NP	FR_MW_SK1- B_WG_Q1_2019_ NP	FR_MW_SK1- A_WG_Q1_2019_ NP		
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1970	664	1970		
	Hardness (as CaCO3) (mg/L)		1160	432	1180		
	pH (pH)		7.61	8.01	7.79		
	ORP (mV)		440	389	437		
	Total Suspended Solids (mg/L)		<1.0	2.3	<1.0		
	Total Dissolved Solids (mg/L)		1640 <sup>DLHC</sup>	536 <sup>DLHC</sup>	1630 <sup>DLHC</sup>		
	Turbidity (NTU)		1.29	3.68	0.58		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		11.8	5.1	11.4		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		352	282	350		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		352	282	350		
	Ammonia as N (mg/L)		<0.0050 <sup>DLHC</sup>	0.0146	<0.0050 <sup>DLHC</sup>		
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.050	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)		<2.5 <sup>DLHC</sup>	4.32	<2.5 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)		<0.10 <sup>DLHC</sup>	0.146	<0.10 <sup>DLHC</sup>		
	Ion Balance (%)		107	98.1	105		
	Nitrate and Nitrite (as N) (mg/L)		64.6	0.818	66.0		
	Nitrate (as N) (mg/L)		64.6 <sup>DLHC</sup>	0.805	66.0 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	0.0127	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	0.236	<0.050 <sup>TKNI</sup>		
	Total Nitrogen (mg/L)		64.6	1.05	66.0		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0019	<0.0010	0.0027		
	Phosphorus (P)-Total (mg/L)		0.0034	0.0020	0.0047		
	Sulfate (SO4) (mg/L)		518 <sup>DLHC</sup>	168	537 <sup>DLHC</sup>		
	Anion Sum (meq/L)		22.4	9.32	22.9		
	Cation Sum (meq/L)		23.9	9.14	24.0		
Cation - Anion Balance (%)		3.2	-1.0	2.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	0.56		
	Total Organic Carbon (mg/L)		<0.50	<0.50	1.04		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		0.0010	0.0011	<0.0010		
	Antimony (Sb)-Dissolved (mg/L)		0.00010	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00037	<0.00010		
	Barium (Ba)-Dissolved (mg/L)		0.0956	0.0810	0.0948		

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2251134-1	L2251134-2	L2251134-3
		Description	WATER	WATER	WATER
		Sampled Date	28-MAR-19	28-MAR-19	28-MAR-19
		Sampled Time	10:00	14:45	09:40
		Client ID	FR_MW_SK1- C_WG_Q1_2019_ NP	FR_MW_SK1- B_WG_Q1_2019_ NP	FR_MW_SK1- A_WG_Q1_2019_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.015	0.015	0.016
	Cadmium (Cd)-Dissolved (mg/L)		0.0000451	0.0000094	0.0000392
	Calcium (Ca)-Dissolved (mg/L)		278	116	281
	Chromium (Cr)-Dissolved (mg/L)		0.00023	<0.00010	0.00044
	Cobalt (Co)-Dissolved (mg/L)		0.00042	0.00024	0.00042
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.231	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0544	0.0109	0.0500
	Magnesium (Mg)-Dissolved (mg/L)		113	34.6	115
	Manganese (Mn)-Dissolved (mg/L)		0.00031	0.282	0.00040
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000419	0.000621	0.000447
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00067	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		2.70	0.99	2.85
	Selenium (Se)-Dissolved (mg/L)		0.260	0.00198	0.266
	Silicon (Si)-Dissolved (mg/L)		2.67 <sup>DLDS</sup>	3.64 <sup>DLDS</sup>	2.68 <sup>DLDS</sup>
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		4.20	5.02	4.24
	Strontium (Sr)-Dissolved (mg/L)		0.285	0.248	0.294
	Sulfur (S)-Dissolved (mg/L)		181 <sup>DLDS</sup>	62.6 <sup>DLDS</sup>	182 <sup>DLDS</sup>
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00658	0.00141	0.00644
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2251134-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2251134-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2251134-1, -2, -3

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

**MET-DIS-ICP-CL**                      Water                      Dissolved Metals by ICPOES                      APHA 3030B/EPA 6010D

"This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (APHA Method 3030B) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**N-T-CALC-CL**                      Water                      Total Nitrogen (Calculation)                      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**                      Water                      Nitrate+Nitrite                      CALCULATION

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

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

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

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

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

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

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

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

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

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

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

**PH-CL**                      Water                      pH                      APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

## Reference Information

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

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

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

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

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

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

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

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

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

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

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

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

**Chain of Custody Numbers:**

19-SK1-190328

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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





## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Brian Hansen

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4589933							
<b>WG3020254-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			109.2		%		85-115	03-APR-19
<b>WG3020254-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	03-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4589897							
<b>WG3020224-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			94.9		%		85-115	03-APR-19
<b>WG3020224-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-APR-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4589078							
<b>WG3019429-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.2		%		80-120	02-APR-19
<b>WG3019429-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			93.3		%		80-120	02-APR-19
<b>WG3019429-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-APR-19
<b>WG3019429-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-APR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4588487							
<b>WG3018703-6</b>	<b>LCS</b>							
Bromide (Br)			91.7		%		85-115	31-MAR-19
<b>WG3018703-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4591223							
<b>WG3021968-3</b>	<b>DUP</b>	<b>L2251134-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-APR-19
<b>WG3021968-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.9		%		80-120	04-APR-19
<b>WG3021968-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-APR-19
<b>WG3021968-4</b>	<b>MS</b>	<b>L2251134-2</b>						
Dissolved Organic Carbon			115.4		%		70-130	05-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Batch R4591223</b>								
<b>WG3021968-3 DUP</b>		<b>L2251134-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-APR-19
<b>WG3021968-2 LCS</b>								
Total Organic Carbon			113.1		%		80-120	04-APR-19
<b>WG3021968-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-APR-19
<b>WG3021968-4 MS</b>		<b>L2251134-2</b>						
Total Organic Carbon			121.3		%		70-130	05-APR-19
<b>CL-IC-N-CL</b>								
<b>Batch R4588487</b>								
<b>WG3018703-6 LCS</b>								
Chloride (Cl)			94.8		%		90-110	31-MAR-19
<b>WG3018703-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	31-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4589897</b>								
<b>WG3020224-8 LCS</b>								
Conductivity (@ 25C)			102.0		%		90-110	03-APR-19
<b>WG3020224-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	03-APR-19
<b>F-IC-N-CL</b>								
<b>Batch R4588487</b>								
<b>WG3018703-6 LCS</b>								
Fluoride (F)			100.3		%		90-110	31-MAR-19
<b>WG3018703-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	31-MAR-19
<b>HG-D-CVAA-CL</b>								
<b>Batch R4590616</b>								
<b>WG3021222-2 LCS</b>								
Mercury (Hg)-Dissolved			106.0		%		80-120	04-APR-19
<b>WG3021222-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-APR-19
<b>MET-D-CCMS-CL</b>								
<b>Batch R4589078</b>								
<b>WG3019429-2 LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.3		%		80-120	02-APR-19
Antimony (Sb)-Dissolved			95.7		%		80-120	02-APR-19



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-2</b>	<b>LCS</b>	<b>TMRM</b>						
Arsenic (As)-Dissolved			99.5		%		80-120	02-APR-19
Barium (Ba)-Dissolved			103.4		%		80-120	02-APR-19
Bismuth (Bi)-Dissolved			98.4		%		80-120	02-APR-19
Boron (B)-Dissolved			99.3		%		80-120	02-APR-19
Cadmium (Cd)-Dissolved			97.3		%		80-120	02-APR-19
Calcium (Ca)-Dissolved			96.4		%		80-120	02-APR-19
Chromium (Cr)-Dissolved			101.7		%		80-120	02-APR-19
Cobalt (Co)-Dissolved			100.5		%		80-120	02-APR-19
Copper (Cu)-Dissolved			99.8		%		80-120	02-APR-19
Iron (Fe)-Dissolved			101.9		%		80-120	02-APR-19
Lead (Pb)-Dissolved			99.6		%		80-120	02-APR-19
Lithium (Li)-Dissolved			104.8		%		80-120	02-APR-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	02-APR-19
Manganese (Mn)-Dissolved			102.5		%		80-120	02-APR-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	02-APR-19
Nickel (Ni)-Dissolved			100.1		%		80-120	02-APR-19
Phosphorus (P)-Dissolved			106.8		%		70-130	02-APR-19
Potassium (K)-Dissolved			104.9		%		80-120	02-APR-19
Selenium (Se)-Dissolved			96.0		%		80-120	02-APR-19
Silver (Ag)-Dissolved			102.3		%		80-120	02-APR-19
Sodium (Na)-Dissolved			103.3		%		80-120	02-APR-19
Strontium (Sr)-Dissolved			95.4		%		80-120	02-APR-19
Thallium (Tl)-Dissolved			95.6		%		80-120	02-APR-19
Tin (Sn)-Dissolved			99.96		%		80-120	02-APR-19
Titanium (Ti)-Dissolved			102.2		%		80-120	02-APR-19
Uranium (U)-Dissolved			96.5		%		80-120	02-APR-19
Vanadium (V)-Dissolved			103.0		%		80-120	02-APR-19
Zinc (Zn)-Dissolved			102.0		%		80-120	02-APR-19
Zirconium (Zr)-Dissolved			102.2		%		80-120	02-APR-19
<b>WG3019429-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.2		%		80-120	02-APR-19
Antimony (Sb)-Dissolved			95.3		%		80-120	02-APR-19
Arsenic (As)-Dissolved			99.2		%		80-120	02-APR-19
Barium (Ba)-Dissolved			102.2		%		80-120	02-APR-19



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-6</b>	<b>LCS</b>	<b>TMRM</b>						
Bismuth (Bi)-Dissolved			97.1		%		80-120	02-APR-19
Boron (B)-Dissolved			96.2		%		80-120	02-APR-19
Cadmium (Cd)-Dissolved			101.3		%		80-120	02-APR-19
Calcium (Ca)-Dissolved			98.1		%		80-120	02-APR-19
Chromium (Cr)-Dissolved			101.6		%		80-120	02-APR-19
Cobalt (Co)-Dissolved			99.8		%		80-120	02-APR-19
Copper (Cu)-Dissolved			99.4		%		80-120	02-APR-19
Iron (Fe)-Dissolved			101.4		%		80-120	02-APR-19
Lead (Pb)-Dissolved			97.8		%		80-120	02-APR-19
Lithium (Li)-Dissolved			99.5		%		80-120	02-APR-19
Magnesium (Mg)-Dissolved			99.4		%		80-120	02-APR-19
Manganese (Mn)-Dissolved			102.2		%		80-120	02-APR-19
Molybdenum (Mo)-Dissolved			102.9		%		80-120	02-APR-19
Nickel (Ni)-Dissolved			98.8		%		80-120	02-APR-19
Phosphorus (P)-Dissolved			106.0		%		70-130	02-APR-19
Potassium (K)-Dissolved			102.2		%		80-120	02-APR-19
Selenium (Se)-Dissolved			94.3		%		80-120	02-APR-19
Silver (Ag)-Dissolved			103.2		%		80-120	02-APR-19
Sodium (Na)-Dissolved			97.9		%		80-120	02-APR-19
Strontium (Sr)-Dissolved			99.1		%		80-120	02-APR-19
Thallium (Tl)-Dissolved			98.1		%		80-120	02-APR-19
Tin (Sn)-Dissolved			104.1		%		80-120	02-APR-19
Titanium (Ti)-Dissolved			99.96		%		80-120	02-APR-19
Uranium (U)-Dissolved			99.2		%		80-120	02-APR-19
Vanadium (V)-Dissolved			100.9		%		80-120	02-APR-19
Zinc (Zn)-Dissolved			100.4		%		80-120	02-APR-19
Zirconium (Zr)-Dissolved			103.6		%		80-120	02-APR-19
<b>WG3019429-1</b>								
	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-APR-19



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-1 MB</b>								
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	02-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	02-APR-19
<b>WG3019429-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	02-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-APR-19



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589078</b>							
<b>WG3019429-5</b>	<b>MB</b>							
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-APR-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	02-APR-19
<b>MET-DIS-ICP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4591409</b>							
<b>WG3022141-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silicon (Si)-Dissolved			100.2		%		80-120	05-APR-19
Sulfur (S)-Dissolved			96.3		%		80-120	05-APR-19
<b>WG3022141-1</b>	<b>MB</b>							
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-APR-19
Sulfur (S)-Dissolved			<1.0		mg/L		1	05-APR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Batch R4590644</b>								
<b>WG3021264-13</b>	<b>DUP</b>	<b>L2251134-3</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-APR-19
<b>WG3021264-4</b>	<b>LCS</b>							
Ammonia as N			114.9		%		85-115	04-APR-19
<b>WG3021264-3</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-APR-19
<b>WG3021264-14</b>	<b>MS</b>	<b>L2251134-3</b>						
Ammonia as N			118.3		%		75-125	04-APR-19
<b>NO2-L-IC-N-CL</b>								
<b>Batch R4588487</b>								
<b>WG3018703-6</b>	<b>LCS</b>							
Nitrite (as N)			101.3		%		90-110	31-MAR-19
<b>WG3018703-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4588487</b>								
<b>WG3018703-6</b>	<b>LCS</b>							
Nitrate (as N)			93.4		%		90-110	31-MAR-19
<b>WG3018703-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAR-19
<b>ORP-CL</b>								
<b>Batch R4589353</b>								
<b>WG3019535-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	02-APR-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4591125</b>								
<b>WG3021736-30</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.8		%		80-120	04-APR-19
<b>WG3021736-29</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-APR-19
<b>PH-CL</b>								
<b>Batch R4589897</b>								
<b>WG3020224-8</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	03-APR-19
<b>PO4-DO-L-COL-CL</b>								



## Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4587553							
<b>WG3017731-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	30-MAR-19
<b>WG3017731-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4588487							
<b>WG3018703-6</b>	<b>LCS</b>							
Sulfate (SO4)			96.6		%		90-110	31-MAR-19
<b>WG3018703-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4591268							
<b>WG3020896-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.9		%		85-115	04-APR-19
<b>WG3020896-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-APR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4591400							
<b>WG3022137-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.9		%		75-125	04-APR-19
<b>WG3022137-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-APR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4591318							
<b>WG3020786-4</b>	<b>LCS</b>							
Total Suspended Solids			114.7		%		85-115	04-APR-19
<b>WG3020786-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	04-APR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4588130							
<b>WG3017798-5</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	30-MAR-19
<b>WG3017798-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-MAR-19



# Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 9 of 10

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2251134

Report Date: 08-APR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	28-MAR-19 10:00	02-APR-19 09:15	0.25	119	hours	EHTR-FM
	2	28-MAR-19 14:45	02-APR-19 09:15	0.25	114	hours	EHTR-FM
	3	28-MAR-19 09:40	02-APR-19 09:15	0.25	120	hours	EHTR-FM
pH	1	28-MAR-19 10:00	03-APR-19 09:00	0.25	143	hours	EHTR-FM
	2	28-MAR-19 14:45	03-APR-19 09:00	0.25	138	hours	EHTR-FM
	3	28-MAR-19 09:40	03-APR-19 09:00	0.25	143	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2251134 were received on 29-MAR-19 09:00.

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

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

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



L2251134-COFC

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company: SNC-Lavalin ~NELSON		Select Report Format: <input checked="" type="checkbox"/> F <input type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Brian Hansen		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			PRIORITY (Business Days)		4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-60%] <input type="checkbox"/>		EMERGENCY					
Phone: Tel.: 250-354-1664 x 53217 Cell.: 250-505-6491		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			1 Business day [E1 - 100%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:													
Street: # 3 - 520 Lake Street		Email 1 or Fax: brian.hansen2@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province: Nelson, BC		Email 2: vicky.lipinski@snclavalin.com			<b>Analysis Request</b>													
Postal Code: V1L 4C6		Email 3: 'cam.jaeger', 'kristina.birk'@teck.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Invoice To: Same as Report To <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<b>Invoice Distribution</b>																
Copy of Invoice with Report <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																
Company:		Email 1 or Fax: brian.hansen2@snclavalin.com																
Contact:		Email 2: payables@snclavalin.com																
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#:																
Job #: 659534		Major/Minor Code: Routing Code:																
PO / AFE: SSGMP		Requisitioner:																
LSD:		Location:																
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1816			Sampler: RJG													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	REPORTING CODES:	Dissolved Boron in Water (CL-B-DIS-MS)	Dissolved Bismuth in Water (CL-BI-DIS-MS)	Dissolved Ca in Water (CL-CA-DIS-COMS)	SAMPLES ON HOLD	NUMBER OF CONTAINERS
	FR-MW-SK1-C-WG-	Q1-2019-NP	28-MAR-19	1000	Water	R	R	R	R	R	R	R		R	R	R		5
	FR-MW-SK1-B-WG-	Q1-2019-NP	↓	1445	↓	R	R	R	R	R	R	R		R	R	R		5
	FR-MW-SK1-A-WG-	Q1-2019-NP	↓	0940	↓	R	R	R	R	R	R	R		R	R	R		5
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>													
Are samples taken from a Regulated DW System? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human consumption/ use? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
					Cooling Initiated <input type="checkbox"/>													
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C								
										4								
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>										
Released by: <i>[Signature]</i>		Date: 2019-03-28		Time: 1700		Received by: <i>[Signature]</i>		Date: 3/29		Time: 9:00								



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 11-APR-19  
Report Date: 22-APR-19 16:44 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2256457  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 13  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2256457-1 WG 10-APR-19 14:45 FR_TB-2A_2019-04-10	L2256457-2 WG 10-APR-19 08:20 FR_LM-3A_2019-04-10	L2256457-3 WG 10-APR-19 12:09 FR_TRP_2019-04-10	L2256457-4 WG 10-APR-19 09:55 FR_KB-1_2019-04-10	L2256457-5 WG 10-APR-19 12:04 FR_KB-2_2019-04-10
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	777	696	<2.0	2410	2470
	Hardness (as CaCO3) (mg/L)	393	36.4	<0.50	1540	1570
	pH (pH)	7.58	8.32	5.42	7.68	7.66
	ORP (mV)	455	419	451	415	453
	Total Suspended Solids (mg/L)	1720 <sup>DLHC</sup>	88.1 <sup>DLHC</sup>	<1.0	1.2 <sup>DLHC</sup>	6.0 <sup>DLHC</sup>
	Total Dissolved Solids (mg/L)	430 <sup>DLHC</sup>	438 <sup>DLHC</sup>	<10	2040 <sup>DLHC</sup>	2110 <sup>DLHC</sup>
	Turbidity (NTU)	2030	196	<0.10	0.39	2.15
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	30.9	<1.0	<1.0	17.7	27.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	492	362	<1.0	410	416
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	6.6	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	492	368	<1.0	410	416
	Ammonia as N (mg/L)	3.57 <sup>DLHC</sup>	0.573	0.0305 <sup>RRV</sup>	0.0158 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.050	0.771	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	<0.50	6.30	<0.50	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.372	0.737	<0.020	0.16 <sup>DLHC</sup>	0.16 <sup>DLHC</sup>
	Ion Balance (%)	89.7	107	0.0	96.6 <sup>DLHC</sup>	96.6 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)	0.0090	0.0339	<0.0050	98.3 <sup>DLHC</sup>	102 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	0.0018	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	4.75	2.11	<0.050	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013	0.0102	<0.0010	0.0023	0.0016
	Phosphorus (P)-Total (mg/L)	0.0025	0.224 <sup>DLHC</sup>	<0.0020	0.0024 <sup>DLHC</sup>	0.0042 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	<0.30	31.0	<0.30	813 <sup>DLHC</sup>	819 <sup>DLHC</sup>
	Anion Sum (meq/L)	9.86	8.23	<0.10	32.2	32.7
	Cation Sum (meq/L)	8.84	8.79	<0.10	31.1	31.6
	Cation - Anion Balance (%)	-5.4	3.3	0.0	-1.7	-1.7
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	5.88	<0.50	0.98
Total Organic Carbon (mg/L)		0.75	29.5	<0.50	0.80	0.98
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.020	0.0098	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>
	Antimony (Sb)-Dissolved (mg/L)	<0.0020	0.00124	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0020	0.00161	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>
	Barium (Ba)-Dissolved (mg/L)	8.13	0.149	<0.00010	0.0479 <sup>DLDS</sup>	0.0780 <sup>DLDS</sup>
	Beryllium (Be)-Dissolved (ug/L)	<0.40	<0.020	<0.020	<0.10 <sup>DLM</sup>	<0.10 <sup>DLM</sup>

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2256457-1 WG 10-APR-19 14:45 FR_TB-2A_2019-04-10	L2256457-2 WG 10-APR-19 08:20 FR_LM-3A_2019-04-10	L2256457-3 WG 10-APR-19 12:09 FR_TRP_2019-04-10	L2256457-4 WG 10-APR-19 09:55 FR_KB-1_2019-04-10	L2256457-5 WG 10-APR-19 12:04 FR_KB-2_2019-04-10
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.0010	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.00025 <sup>DLDS</sup>
	Boron (B)-Dissolved (mg/L)	<0.20	0.745	<0.010	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>
	Cadmium (Cd)-Dissolved (ug/L)	<0.10	<0.0050	<0.0050	0.611 <sup>DLDS</sup>	0.145 <sup>DLDS</sup>
	Calcium (Ca)-Dissolved (mg/L)	99.7	9.95	<0.050	350 <sup>DLDS</sup>	367 <sup>DLDS</sup>
	Chromium (Cr)-Dissolved (mg/L)	<0.0020	0.00030	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>
	Cobalt (Co)-Dissolved (ug/L)	<2.0	0.11	<0.10	1.95 <sup>DLDS</sup>	<0.50 <sup>DLDS</sup>
	Copper (Cu)-Dissolved (mg/L)	<0.0040	0.00032	<0.00020	<0.0010 <sup>DLDS</sup>	<0.0010 <sup>DLDS</sup>
	Iron (Fe)-Dissolved (mg/L)	0.74	<0.010	<0.010	<0.050 <sup>DLDS</sup>	<0.050 <sup>DLDS</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.00025 <sup>DLDS</sup>
	Lithium (Li)-Dissolved (mg/L)	0.612	0.189	<0.0010	0.100 <sup>DLDS</sup>	0.0982 <sup>DLDS</sup>
	Magnesium (Mg)-Dissolved (mg/L)	34.9	2.82	<0.0050	162 <sup>DLDS</sup>	158 <sup>DLDS</sup>
	Manganese (Mn)-Dissolved (mg/L)	0.0769	0.0311	<0.00010	<0.00050 <sup>DLDS</sup>	0.00085 <sup>DLDS</sup>
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050 <sup>DLDS</sup>
	Molybdenum (Mo)-Dissolved (mg/L)	0.0014	0.00434	<0.000050	0.00111 <sup>DLDS</sup>	0.00110 <sup>DLDS</sup>
	Nickel (Ni)-Dissolved (mg/L)	<0.010	0.00253	<0.00050	0.0242 <sup>DLDS</sup>	0.0052 <sup>DLDS</sup>
	Potassium (K)-Dissolved (mg/L)	13.4	3.31	<0.050	4.88 <sup>DLDS</sup>	4.42 <sup>DLDS</sup>
	Selenium (Se)-Dissolved (ug/L)	<1.0	0.500	<0.050	287 <sup>DLDS</sup>	300 <sup>DLDS</sup>
	Silicon (Si)-Dissolved (mg/L)	3.1	4.16	<0.050	2.28 <sup>DLDS</sup>	2.31 <sup>DLDS</sup>
	Silver (Ag)-Dissolved (mg/L)	<0.00020	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>
	Sodium (Na)-Dissolved (mg/L)	8.1	182	<0.050	4.33 <sup>DLDS</sup>	4.26 <sup>DLDS</sup>
	Strontium (Sr)-Dissolved (mg/L)	0.481	0.385	<0.00020	0.293 <sup>DLDS</sup>	0.310 <sup>DLDS</sup>
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000050 <sup>DLDS</sup>
	Tin (Sn)-Dissolved (mg/L)	<0.0020	0.00111	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00050 <sup>DLDS</sup>
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010 <sup>DLDS</sup>	<0.010 <sup>DLDS</sup>
	Uranium (U)-Dissolved (mg/L)	<0.00020	0.00355	<0.000010	0.0132 <sup>DLDS</sup>	0.0122 <sup>DLDS</sup>
	Vanadium (V)-Dissolved (mg/L)	<0.010	0.00104	<0.00050	<0.0025 <sup>DLDS</sup>	<0.0025 <sup>DLDS</sup>
	Zinc (Zn)-Dissolved (mg/L)	<0.020	<0.0010	<0.0010	0.0123 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2256457-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

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

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

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

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

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



## Reference Information

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

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

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

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

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

**Chain of Custody Numbers:**

13

**GLOSSARY OF REPORT TERMS**

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

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*  
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*  
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**  
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 1 of 12

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600810</b>							
<b>WG3026758-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.8		%		85-115	12-APR-19
<b>WG3026758-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	12-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600929</b>							
<b>WG3027229-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.0		%		85-115	13-APR-19
<b>WG3027229-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-APR-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.7		%		80-120	17-APR-19
<b>WG3029667-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			98.3		%		80-120	17-APR-19
<b>WG3029667-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-APR-19
<b>WG3029667-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-APR-19
<b>WG3029667-4</b>	<b>MS</b>	<b>L2256457-3</b>						
Beryllium (Be)-Dissolved			109.2		%		70-130	17-APR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600971</b>							
<b>WG3027373-2</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	12-APR-19
<b>WG3027373-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-APR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605674</b>							
<b>WG3030685-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.9		%		80-120	17-APR-19
<b>WG3030685-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4605674							
<b>WG3030685-2</b>	<b>LCS</b>							
Total Organic Carbon			106.5		%		80-120	17-APR-19
<b>WG3030685-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	17-APR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4600971							
<b>WG3027373-2</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	12-APR-19
<b>WG3027373-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-APR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4600929							
<b>WG3027229-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.3		%		90-110	13-APR-19
<b>WG3027229-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-APR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4600971							
<b>WG3027373-2</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	12-APR-19
<b>WG3027373-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-APR-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R4600994							
<b>WG3027402-3</b>	<b>DUP</b>	<b>L2256457-5</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	14-APR-19
<b>WG3027402-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.0		%		80-120	14-APR-19
<b>WG3027402-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	14-APR-19
<b>WG3027402-4</b>	<b>MS</b>	<b>L2256457-5</b>						
Mercury (Hg)-Dissolved			98.1		%		70-130	14-APR-19
<b>HG-T-CVAA-CL</b>	<b>Water</b>							
Batch	R4600994							
<b>WG3027403-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.1		%		80-120	14-APR-19
<b>WG3027403-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600994</b>							
<b>WG3027403-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-APR-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.3		%		80-120	17-APR-19
Antimony (Sb)-Dissolved			103.8		%		80-120	17-APR-19
Arsenic (As)-Dissolved			100.3		%		80-120	17-APR-19
Barium (Ba)-Dissolved			96.4		%		80-120	17-APR-19
Bismuth (Bi)-Dissolved			97.9		%		80-120	17-APR-19
Boron (B)-Dissolved			99.3		%		80-120	17-APR-19
Cadmium (Cd)-Dissolved			95.7		%		80-120	17-APR-19
Calcium (Ca)-Dissolved			110.1		%		80-120	17-APR-19
Chromium (Cr)-Dissolved			100.2		%		80-120	17-APR-19
Cobalt (Co)-Dissolved			98.6		%		80-120	17-APR-19
Copper (Cu)-Dissolved			97.7		%		80-120	17-APR-19
Iron (Fe)-Dissolved			98.0		%		80-120	17-APR-19
Lead (Pb)-Dissolved			95.6		%		80-120	17-APR-19
Lithium (Li)-Dissolved			96.4		%		80-120	17-APR-19
Magnesium (Mg)-Dissolved			96.0		%		80-120	17-APR-19
Manganese (Mn)-Dissolved			100.4		%		80-120	17-APR-19
Molybdenum (Mo)-Dissolved			107.2		%		80-120	17-APR-19
Nickel (Ni)-Dissolved			98.3		%		80-120	17-APR-19
Potassium (K)-Dissolved			102.3		%		80-120	17-APR-19
Selenium (Se)-Dissolved			97.2		%		80-120	17-APR-19
Silicon (Si)-Dissolved			101.7		%		60-140	17-APR-19
Silver (Ag)-Dissolved			109.7		%		80-120	17-APR-19
Sodium (Na)-Dissolved			99.6		%		80-120	17-APR-19
Strontium (Sr)-Dissolved			103.6		%		80-120	17-APR-19
Thallium (Tl)-Dissolved			98.5		%		80-120	17-APR-19
Tin (Sn)-Dissolved			99.1		%		80-120	17-APR-19
Titanium (Ti)-Dissolved			97.6		%		80-120	17-APR-19
Uranium (U)-Dissolved			98.9		%		80-120	17-APR-19
Vanadium (V)-Dissolved			101.1		%		80-120	17-APR-19



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-2</b>	<b>LCS</b>	<b>TMRM</b>						
Zinc (Zn)-Dissolved			97.3		%		80-120	17-APR-19
<b>WG3029667-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.6		%		80-120	17-APR-19
Antimony (Sb)-Dissolved			104.3		%		80-120	17-APR-19
Arsenic (As)-Dissolved			99.8		%		80-120	17-APR-19
Barium (Ba)-Dissolved			96.2		%		80-120	17-APR-19
Bismuth (Bi)-Dissolved			99.2		%		80-120	17-APR-19
Boron (B)-Dissolved			97.3		%		80-120	17-APR-19
Cadmium (Cd)-Dissolved			98.2		%		80-120	17-APR-19
Calcium (Ca)-Dissolved			101.1		%		80-120	17-APR-19
Chromium (Cr)-Dissolved			100.2		%		80-120	17-APR-19
Cobalt (Co)-Dissolved			97.6		%		80-120	17-APR-19
Copper (Cu)-Dissolved			98.3		%		80-120	17-APR-19
Iron (Fe)-Dissolved			99.96		%		80-120	17-APR-19
Lead (Pb)-Dissolved			95.5		%		80-120	17-APR-19
Lithium (Li)-Dissolved			97.4		%		80-120	17-APR-19
Magnesium (Mg)-Dissolved			97.9		%		80-120	17-APR-19
Manganese (Mn)-Dissolved			102.0		%		80-120	17-APR-19
Molybdenum (Mo)-Dissolved			105.5		%		80-120	17-APR-19
Nickel (Ni)-Dissolved			99.7		%		80-120	17-APR-19
Potassium (K)-Dissolved			103.1		%		80-120	17-APR-19
Selenium (Se)-Dissolved			95.6		%		80-120	17-APR-19
Silicon (Si)-Dissolved			105.5		%		60-140	17-APR-19
Silver (Ag)-Dissolved			101.4		%		80-120	17-APR-19
Sodium (Na)-Dissolved			101.0		%		80-120	17-APR-19
Strontium (Sr)-Dissolved			101.9		%		80-120	17-APR-19
Thallium (Tl)-Dissolved			95.5		%		80-120	17-APR-19
Tin (Sn)-Dissolved			99.5		%		80-120	17-APR-19
Titanium (Ti)-Dissolved			102.5		%		80-120	17-APR-19
Uranium (U)-Dissolved			98.7		%		80-120	17-APR-19
Vanadium (V)-Dissolved			103.5		%		80-120	17-APR-19
Zinc (Zn)-Dissolved			95.6		%		80-120	17-APR-19
<b>WG3029667-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-1 MB</b>								
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
<b>WG3029667-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-5</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
<b>WG3029667-4</b>	<b>MS</b>	<b>L2256457-3</b>						
Aluminum (Al)-Dissolved			105.0		%		70-130	17-APR-19
Antimony (Sb)-Dissolved			111.4		%		70-130	17-APR-19
Arsenic (As)-Dissolved			109.4		%		70-130	17-APR-19
Barium (Ba)-Dissolved			101.9		%		70-130	17-APR-19
Bismuth (Bi)-Dissolved			112.7		%		70-130	17-APR-19
Boron (B)-Dissolved			104.7		%		70-130	17-APR-19
Cadmium (Cd)-Dissolved			105.2		%		70-130	17-APR-19
Calcium (Ca)-Dissolved			108.5		%		70-130	17-APR-19



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4604234</b>							
<b>WG3029667-4</b>	<b>MS</b>	<b>L2256457-3</b>						
Chromium (Cr)-Dissolved			108.9		%		70-130	17-APR-19
Cobalt (Co)-Dissolved			104.3		%		70-130	17-APR-19
Copper (Cu)-Dissolved			105.4		%		70-130	17-APR-19
Iron (Fe)-Dissolved			105.3		%		70-130	17-APR-19
Lead (Pb)-Dissolved			104.4		%		70-130	17-APR-19
Lithium (Li)-Dissolved			101.8		%		70-130	17-APR-19
Magnesium (Mg)-Dissolved			104.0		%		70-130	17-APR-19
Manganese (Mn)-Dissolved			105.0		%		70-130	17-APR-19
Molybdenum (Mo)-Dissolved			107.8		%		70-130	17-APR-19
Nickel (Ni)-Dissolved			105.9		%		70-130	17-APR-19
Potassium (K)-Dissolved			109.6		%		70-130	17-APR-19
Selenium (Se)-Dissolved			107.3		%		70-130	17-APR-19
Silicon (Si)-Dissolved			104.8		%		70-130	17-APR-19
Silver (Ag)-Dissolved			109.1		%		70-130	17-APR-19
Sodium (Na)-Dissolved			103.4		%		70-130	17-APR-19
Strontium (Sr)-Dissolved			106.8		%		70-130	17-APR-19
Thallium (Tl)-Dissolved			107.4		%		70-130	17-APR-19
Tin (Sn)-Dissolved			102.3		%		70-130	17-APR-19
Titanium (Ti)-Dissolved			105.6		%		70-130	17-APR-19
Uranium (U)-Dissolved			105.0		%		70-130	17-APR-19
Vanadium (V)-Dissolved			106.7		%		70-130	17-APR-19
Zinc (Zn)-Dissolved			106.7		%		70-130	17-APR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605534</b>							
<b>WG3030311-2</b>	<b>LCS</b>							
Ammonia as N			101.9		%		85-115	17-APR-19
<b>WG3030311-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-APR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600971</b>							
<b>WG3027373-2</b>	<b>LCS</b>							
Nitrite (as N)			105.4		%		90-110	12-APR-19
<b>WG3027373-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-APR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4600971							
<b>WG3027373-2</b>	<b>LCS</b>							
Nitrate (as N)			99.9		%		90-110	12-APR-19
<b>WG3027373-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-APR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4601845							
<b>WG3028071-21</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	15-APR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4606199							
<b>WG3031268-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			94.7		%		80-120	20-APR-19
<b>WG3031268-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-APR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4600929							
<b>WG3027229-2</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	13-APR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4598589							
<b>WG3026619-15</b>	<b>DUP</b>	<b>L2256457-4</b>						
Orthophosphate-Dissolved (as P)		0.0023	0.0026		mg/L	12	20	12-APR-19
<b>WG3026619-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			93.5		%		80-120	12-APR-19
<b>WG3026619-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			93.6		%		80-120	12-APR-19
<b>WG3026619-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-APR-19
<b>WG3026619-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-APR-19
<b>WG3026619-16</b>	<b>MS</b>	<b>L2256457-5</b>						
Orthophosphate-Dissolved (as P)			104.8		%		70-130	12-APR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4600971							
<b>WG3027373-2 LCS</b>								
Sulfate (SO4)			100.1		%		90-110	12-APR-19
<b>WG3027373-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-APR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4603906							
<b>WG3028405-2 LCS</b>								
Total Dissolved Solids			96.6		%		85-115	16-APR-19
<b>WG3028405-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	16-APR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4605381							
<b>WG3030378-13 LCS</b>								
Total Kjeldahl Nitrogen			96.3		%		75-125	17-APR-19
<b>WG3030378-17 LCS</b>								
Total Kjeldahl Nitrogen			95.7		%		75-125	17-APR-19
<b>WG3030378-2 LCS</b>								
Total Kjeldahl Nitrogen			98.2		%		75-125	17-APR-19
<b>WG3030378-21 LCS</b>								
Total Kjeldahl Nitrogen			94.7		%		75-125	17-APR-19
<b>WG3030378-24 LCS</b>								
Total Kjeldahl Nitrogen			95.6		%		75-125	17-APR-19
<b>WG3030378-5 LCS</b>								
Total Kjeldahl Nitrogen			97.0		%		75-125	17-APR-19
<b>WG3030378-9 LCS</b>								
Total Kjeldahl Nitrogen			98.6		%		75-125	17-APR-19
<b>WG3030378-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-12 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-16 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-20 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-23 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19



## Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4605381							
WG3030378-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4602058							
WG3027671-8	LCS							
Total Suspended Solids			98.8		%		85-115	15-APR-19
WG3027671-7	MB							
Total Suspended Solids			<1.0		mg/L		1	15-APR-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4600508							
WG3026893-3	DUP		L2256457-1					
Turbidity		2030	2030		NTU	0.0	15	12-APR-19
WG3026893-2	LCS							
Turbidity			97.5		%		85-115	12-APR-19
WG3026893-1	MB							
Turbidity			<0.10		NTU		0.1	12-APR-19

# Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 11 of 12

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2256457

Report Date: 22-APR-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	10-APR-19 14:45	15-APR-19 13:45	0.25	119	hours	EHTR-FM
	2	10-APR-19 08:20	15-APR-19 13:45	0.25	126	hours	EHTR-FM
	3	10-APR-19 12:09	15-APR-19 13:45	0.25	122	hours	EHTR-FM
	4	10-APR-19 09:55	15-APR-19 13:45	0.25	124	hours	EHTR-FM
	5	10-APR-19 12:04	15-APR-19 13:45	0.25	122	hours	EHTR-FM
pH							
	1	10-APR-19 14:45	13-APR-19 09:00	0.25	66	hours	EHTR-FM
	2	10-APR-19 08:20	13-APR-19 09:00	0.25	73	hours	EHTR-FM
	3	10-APR-19 12:09	13-APR-19 09:00	0.25	69	hours	EHTR-FM
	4	10-APR-19 09:55	13-APR-19 09:00	0.25	71	hours	EHTR-FM
	5	10-APR-19 12:04	13-APR-19 09:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2256457 were received on 11-APR-19 14:00.

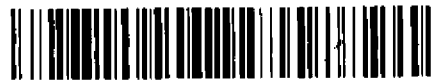
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

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

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

COC ID:	13			TURNAROUND TIME:	Regular			RUSH:				
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	teckcoal@teck.com	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	Gregory.Jones@equi.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:				
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	I'P000617299			

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2256457-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	ANALYSIS REQUESTED
FR_TB-1A_2019-04-10	<i>TB-2A</i> FR_TB-1A	WG	N	4/10/2019	14:45	G	6	1	1	1	1	1	1	N F F N
FR_LM-3A_2019-04-10	FR_LM-3A	WG	N	4/10/2019	8:20	G	6	1	1	1	1	1	1	NONE H2SO4 H2SO4 HNO3 HCL HCL
FR_TRP_2019-04-10	FR_TRP	WG	N	4/10/2019	12:09	G	6	1	1	1	1	1	1	
FR_KB-1_2019-04-10	FR_KB-1	WG	N	4/10/2019	9:55	G	6	1	1	1	1	1	1	
FR_KB-2_2019-04-10	FR_KB-2	WG	N	4/10/2019	12:04	G	6	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>R</i>	4/17/19 2:00pm

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Tyler Fortin	Mobile #	250-464-5914
					Sampler's Signature	<i>Tyler Fortin</i>	Date/Time	April 10, 2019



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

Date Received: 12-APR-19  
Report Date: 10-FEB-20 11:38 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-5204

## Certificate of Analysis

Lab Work Order #: L2257394  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190411-1336  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2257394-1 WG 11-APR-19 10:10 FR_09-04- A_QTR_2019-04- 01_N	L2257394-2 WG 11-APR-19 10:30 FR_09-04- B_QTR_2019-04- 01_N	L2257394-3 WG 11-APR-19 10:30 FR_DC1_QTR_201 9-04-01_N	L2257394-4 WG 11-APR-19 11:30 FR_FLD_QTR_201 9-04-01_N	L2257394-5 WG 11-APR-19 12:00 FR_TRP_QTR_201 9-04-01_N
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1170	1190	1210	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	704	714	728	<0.50	
	pH (pH)	7.62	7.68	7.68	5.52	5.45
	ORP (mV)	334	301	290	474	426
	Total Suspended Solids (mg/L)	2.6	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	919 <sup>DLHC</sup>	929 <sup>DLHC</sup>	923 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)	0.45	0.23	0.24	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	13.0	6.4	6.5	<1.0	1.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	373	377	377	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	373	377	377	<1.0	<1.0
	Ammonia as N (mg/L)	0.0088	<0.0050	0.0149	0.0124 <sup>RRV</sup>	0.0374 <sup>RRV</sup>
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)	7.0 <sup>DLHC</sup>	7.3 <sup>DLHC</sup>	7.0 <sup>DLHC</sup>	<0.50	<0.50
	Fluoride (F) (mg/L)	0.35 <sup>DLHC</sup>	0.35 <sup>DLHC</sup>	0.34 <sup>DLHC</sup>	<0.020	<0.020
	Ion Balance (%)	89.5	87.4	91.3	0.0	0.0
	Nitrate (as N) (mg/L)	2.35 <sup>DLHC</sup>	2.36 <sup>DLHC</sup>	2.25 <sup>DLHC</sup>	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	0.0058 <sup>DLHC</sup>	0.0055 <sup>DLHC</sup>	0.0074 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.271	0.182 <sup>TKNI</sup>	0.212 <sup>TKNI</sup>	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0048	0.0033 <sup>RRV</sup>	0.0037 <sup>RRV</sup>	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0076	<0.0020 <sup>DLHC</sup>	0.0031 <sup>DLHC</sup>	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	406 <sup>DLHC</sup>	431 <sup>DLHC</sup>	412 <sup>DLHC</sup>	<0.30	<0.30
	Anion Sum (meq/L)	16.3	16.9	16.5	<0.10	<0.10
	Cation Sum (meq/L)	14.6	14.8	15.1	<0.10	<0.10
	Cation - Anion Balance (%)	-5.5	-6.7	-4.6	0.0	0.0
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.74	0.73	0.73	<0.50
Total Organic Carbon (mg/L)		0.75	0.76	0.75	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00012	0.00012	0.00011	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.108	0.101	0.102	<0.00010	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

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



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2257394-6 WG 11-APR-19 11:30 FR_TT43_QTR_20 19-04-01_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2370			
	Hardness (as CaCO3) (mg/L)	1450			
	pH (pH)	7.74			
	ORP (mV)	439			
	Total Suspended Solids (mg/L)	1.6			
	Total Dissolved Solids (mg/L)	2090	DLHC		
	Turbidity (NTU)	0.39			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	16.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	405			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	405			
	Ammonia as N (mg/L)	<0.0050	DLHC		
	Bromide (Br) (mg/L)	<0.025	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.18	DLHC		
	Ion Balance (%)	89.6			
	Nitrate (as N) (mg/L)	103	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020			
	Phosphorus (P)-Total (mg/L)	0.0022	DLHC		
	Sulfate (SO4) (mg/L)	833			
	Anion Sum (meq/L)	32.8			
	Cation Sum (meq/L)	29.3			
	Cation - Anion Balance (%)	-5.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.67			
	Total Organic Carbon (mg/L)	0.57			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00043			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0888			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2257394-1	L2257394-2	L2257394-3	L2257394-4	L2257394-5
					WG	WG	WG	WG	WG
		11-APR-19	10:10	FR_09-04-A_QTR_2019-04-01_N	11-APR-19	11-APR-19	11-APR-19	11-APR-19	11-APR-19
					10:30	10:30	10:30	11:30	12:00
					FR_09-04-A_QTR_2019-04-01_N	FR_09-04-B_QTR_2019-04-01_N	FR_DC1_QTR_2019-04-01_N	FR_FLD_QTR_2019-04-01_N	FR_TRP_QTR_2019-04-01_N
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.033	0.032	0.032	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	1.11	1.03	1.02	<0.0050	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	145	149	153	<0.050	<0.050			
	Cesium (Cs)-Dissolved (mg/L)								<0.000010
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			<0.00010
	Cobalt (Co)-Dissolved (ug/L)	1.31	1.22	1.24	<0.10	<0.10			<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000053	<0.000050	<0.000050	<0.000050	<0.000050			<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0868	0.0866	0.0817	<0.0010	<0.0010			<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	83.4	83.2	84.2	<0.10	<0.0050			<0.0050
	Manganese (Mn)-Dissolved (mg/L)	1.47	1.42	1.43	<0.00010	<0.00010			<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00192	0.00177	0.00175	<0.000050	<0.000050			<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00826	0.00802	0.00841	<0.00050	<0.00050			<0.00050
	Phosphorus (P)-Dissolved (mg/L)								<0.050
	Potassium (K)-Dissolved (mg/L)	5.84	5.70	5.69	<0.050	<0.050			<0.050
	Rubidium (Rb)-Dissolved (mg/L)								<0.00020
	Selenium (Se)-Dissolved (ug/L)	5.38	5.00	5.13	<0.050	<0.050			<0.050
	Silicon (Si)-Dissolved (mg/L)	2.71	2.79	2.82	<0.050	<0.10			<0.10
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			<0.000010
	Sodium (Na)-Dissolved (mg/L)	6.80	7.11	7.28	<0.050	<0.050			<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.242	0.237	0.239	<0.00020	<0.00020			<0.00020
	Sulfur (S)-Dissolved (mg/L)								<0.50
	Tellurium (Te)-Dissolved (mg/L)								<0.00020
	Thallium (Tl)-Dissolved (mg/L)	0.000058	0.000062	0.000056	<0.000010	<0.000010			<0.000010
	Thorium (Th)-Dissolved (mg/L)								<0.00010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.00030			<0.00030
	Tungsten (W)-Dissolved (mg/L)								<0.00010
	Uranium (U)-Dissolved (mg/L)	0.00642	0.00603	0.00571	<0.000010	<0.000010			<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0046	0.0039	0.0041	<0.0010	<0.0030			<0.0030
	Zirconium (Zr)-Dissolved (mg/L)								<0.000060

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2257394-6 WG 11-APR-19 11:30 FR_TT43_QTR_20 19-04-01_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.023			
	Cadmium (Cd)-Dissolved (ug/L)	0.0675			
	Calcium (Ca)-Dissolved (mg/L)	317			
	Cesium (Cs)-Dissolved (mg/L)				
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.41			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0865			
	Magnesium (Mg)-Dissolved (mg/L)	161			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00153			
	Nickel (Ni)-Dissolved (mg/L)	0.00147			
	Phosphorus (P)-Dissolved (mg/L)				
	Potassium (K)-Dissolved (mg/L)	4.63			
	Rubidium (Rb)-Dissolved (mg/L)				
	Selenium (Se)-Dissolved (ug/L)	314			
	Silicon (Si)-Dissolved (mg/L)	1.90			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.31			
	Strontium (Sr)-Dissolved (mg/L)	0.313			
	Sulfur (S)-Dissolved (mg/L)				
	Tellurium (Te)-Dissolved (mg/L)				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Thorium (Th)-Dissolved (mg/L)				
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Tungsten (W)-Dissolved (mg/L)				
	Uranium (U)-Dissolved (mg/L)	0.0123			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0015			
	Zirconium (Zr)-Dissolved (mg/L)				

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

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - DOC/D-METAL/D-HG FILTERED AND PRESERVED AT THE LAB

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2257394-1, -2, -3, -4, -6

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

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

## Reference Information

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

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

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

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

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

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

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

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

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

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

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

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

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

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

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

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

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

**Chain of Custody Numbers:**

20190411-1336

**GLOSSARY OF REPORT TERMS**

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 1 of 15

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600933</b>							
<b>WG3027232-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.5		%		85-115	13-APR-19
<b>WG3027232-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.5		%		85-115	13-APR-19
<b>WG3027232-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	13-APR-19
<b>WG3027232-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	13-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4601168</b>							
<b>WG3027387-12</b>	<b>DUP</b>	<b>L2257394-6</b>						
Alkalinity, Total (as CaCO3)		405	398		mg/L	1.6	20	14-APR-19
<b>WG3027387-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.9		%		85-115	14-APR-19
<b>WG3027387-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.4		%		85-115	14-APR-19
<b>WG3027387-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-APR-19
<b>WG3027387-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-APR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4603910</b>							
<b>WG3028290-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.9		%		80-120	17-APR-19
<b>WG3028290-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-APR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600973</b>							
<b>WG3027374-3</b>	<b>DUP</b>	<b>L2257394-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-7</b>	<b>DUP</b>	<b>L2257394-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-2</b>	<b>LCS</b>							
Bromide (Br)			98.9		%		85-115	13-APR-19
<b>WG3027374-6</b>	<b>LCS</b>							
Bromide (Br)			102.5		%		85-115	13-APR-19
<b>WG3027374-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4600973</b>							
<b>WG3027374-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-APR-19
<b>WG3027374-4</b>	<b>MS</b>	<b>L2257394-4</b>						
Bromide (Br)			100.9		%		75-125	13-APR-19
<b>WG3027374-8</b>	<b>MS</b>	<b>L2257394-5</b>						
Bromide (Br)			102.8		%		75-125	13-APR-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606017</b>							
<b>WG3031187-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.0		%		80-120	18-APR-19
<b>WG3031187-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606017</b>							
<b>WG3031187-2</b>	<b>LCS</b>							
Total Organic Carbon			107.5		%		80-120	18-APR-19
<b>WG3031187-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-APR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4600973</b>							
<b>WG3027374-3</b>	<b>DUP</b>	<b>L2257394-4</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-7</b>	<b>DUP</b>	<b>L2257394-5</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-2</b>	<b>LCS</b>							
Chloride (Cl)			100.8		%		90-110	13-APR-19
<b>WG3027374-6</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		90-110	13-APR-19
<b>WG3027374-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-APR-19
<b>WG3027374-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-APR-19
<b>WG3027374-4</b>	<b>MS</b>	<b>L2257394-4</b>						
Chloride (Cl)			100.2		%		75-125	13-APR-19
<b>WG3027374-8</b>	<b>MS</b>	<b>L2257394-5</b>						
Chloride (Cl)			102.5		%		75-125	13-APR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4601168</b>							
<b>WG3027387-12</b>	<b>DUP</b>	<b>L2257394-6</b>						
Conductivity (@ 25C)		2370	2350		uS/cm	0.8	10	14-APR-19
<b>WG3027387-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	14-APR-19
<b>WG3027387-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.2		%		90-110	14-APR-19
<b>WG3027387-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-APR-19
<b>WG3027387-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-APR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4600973</b>							
<b>WG3027374-3</b>	<b>DUP</b>	<b>L2257394-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-7</b>	<b>DUP</b>	<b>L2257394-5</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-2</b>	<b>LCS</b>							
Fluoride (F)			107.8		%		90-110	13-APR-19
<b>WG3027374-6</b>	<b>LCS</b>							
Fluoride (F)			105.4		%		90-110	13-APR-19
<b>WG3027374-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-APR-19
<b>WG3027374-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-APR-19
<b>WG3027374-4</b>	<b>MS</b>	<b>L2257394-4</b>						
Fluoride (F)			106.6		%		75-125	13-APR-19
<b>WG3027374-8</b>	<b>MS</b>	<b>L2257394-5</b>						
Fluoride (F)			109.9		%		75-125	13-APR-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4603428</b>							
<b>WG3029492-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.3		%		80-120	17-APR-19
<b>WG3029492-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-APR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4603910</b>							
<b>WG3028290-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.4		%		80-120	17-APR-19
Antimony (Sb)-Dissolved			104.4		%		80-120	17-APR-19
Arsenic (As)-Dissolved			100.2		%		80-120	17-APR-19
Barium (Ba)-Dissolved			107.0		%		80-120	17-APR-19
Bismuth (Bi)-Dissolved			95.9		%		80-120	17-APR-19
Boron (B)-Dissolved			99.3		%		80-120	17-APR-19
Cadmium (Cd)-Dissolved			104.2		%		80-120	17-APR-19
Calcium (Ca)-Dissolved			98.9		%		80-120	17-APR-19
Chromium (Cr)-Dissolved			99.9		%		80-120	17-APR-19
Cobalt (Co)-Dissolved			103.4		%		80-120	17-APR-19
Copper (Cu)-Dissolved			100.3		%		80-120	17-APR-19
Iron (Fe)-Dissolved			103.1		%		80-120	17-APR-19
Lead (Pb)-Dissolved			95.6		%		80-120	17-APR-19
Lithium (Li)-Dissolved			99.98		%		80-120	17-APR-19
Magnesium (Mg)-Dissolved			103.6		%		80-120	17-APR-19
Manganese (Mn)-Dissolved			102.7		%		80-120	17-APR-19
Molybdenum (Mo)-Dissolved			102.1		%		80-120	17-APR-19
Nickel (Ni)-Dissolved			102.3		%		80-120	17-APR-19
Potassium (K)-Dissolved			103.1		%		80-120	17-APR-19
Selenium (Se)-Dissolved			101.1		%		80-120	17-APR-19
Silicon (Si)-Dissolved			97.3		%		60-140	17-APR-19
Silver (Ag)-Dissolved			101.4		%		80-120	17-APR-19
Sodium (Na)-Dissolved			104.1		%		80-120	17-APR-19
Strontium (Sr)-Dissolved			108.4		%		80-120	17-APR-19
Thallium (Tl)-Dissolved			95.7		%		80-120	17-APR-19
Tin (Sn)-Dissolved			101.8		%		80-120	17-APR-19
Titanium (Ti)-Dissolved			99.1		%		80-120	17-APR-19
Uranium (U)-Dissolved			98.0		%		80-120	17-APR-19
Vanadium (V)-Dissolved			105.2		%		80-120	17-APR-19
Zinc (Zn)-Dissolved			106.7		%		80-120	17-APR-19
<b>WG3028290-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4603910</b>							
<b>WG3028290-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-APR-19
<b>MET-D-MS-BRC-DIG-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605006</b>							
<b>WG3029326-3</b>	<b>DUP</b>	<b>L2257394-5</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-APR-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-MS-BRC-DIG-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605006</b>							
<b>WG3029326-3</b>	<b>DUP</b>	<b>L2257394-5</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-APR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-APR-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-APR-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	18-APR-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-APR-19
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-APR-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-APR-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-APR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-APR-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-APR-19
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-APR-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-APR-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-APR-19
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-APR-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-APR-19
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-APR-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-APR-19
Silicon (Si)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-APR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-APR-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	18-APR-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-APR-19
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	18-APR-19
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-APR-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-APR-19
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	18-APR-19
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-APR-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-APR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-APR-19
Zinc (Zn)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-MS-BRC-DIG-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605006</b>							
<b>WG3029326-3</b>	<b>DUP</b>	<b>L2257394-5</b>						
Zirconium (Zr)-Dissolved		<0.000060	<0.000060	RPD-NA	mg/L	N/A	20	18-APR-19
<b>WG3029326-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.2		%		80-120	18-APR-19
Antimony (Sb)-Dissolved			91.7		%		80-120	18-APR-19
Arsenic (As)-Dissolved			96.9		%		80-120	18-APR-19
Barium (Ba)-Dissolved			94.0		%		80-120	18-APR-19
Beryllium (Be)-Dissolved			100.9		%		80-120	18-APR-19
Bismuth (Bi)-Dissolved			84.0		%		80-120	18-APR-19
Boron (B)-Dissolved			98.4		%		80-120	18-APR-19
Cadmium (Cd)-Dissolved			96.8		%		80-120	18-APR-19
Calcium (Ca)-Dissolved			100.2		%		80-120	18-APR-19
Cesium (Cs)-Dissolved			110.4		%		80-120	18-APR-19
Chromium (Cr)-Dissolved			97.2		%		80-120	18-APR-19
Cobalt (Co)-Dissolved			92.6		%		80-120	18-APR-19
Copper (Cu)-Dissolved			93.8		%		80-120	18-APR-19
Iron (Fe)-Dissolved			94.6		%		80-120	18-APR-19
Lead (Pb)-Dissolved			89.0		%		80-120	18-APR-19
Lithium (Li)-Dissolved			101.0		%		80-120	18-APR-19
Magnesium (Mg)-Dissolved			98.1		%		80-120	18-APR-19
Manganese (Mn)-Dissolved			95.8		%		80-120	18-APR-19
Molybdenum (Mo)-Dissolved			97.6		%		80-120	18-APR-19
Nickel (Ni)-Dissolved			94.2		%		80-120	18-APR-19
Phosphorus (P)-Dissolved			101.5		%		80-120	18-APR-19
Potassium (K)-Dissolved			101.7		%		80-120	18-APR-19
Rubidium (Rb)-Dissolved			96.6		%		80-120	18-APR-19
Selenium (Se)-Dissolved			97.0		%		80-120	18-APR-19
Silicon (Si)-Dissolved			93.6		%		80-120	18-APR-19
Silver (Ag)-Dissolved			99.1		%		80-120	18-APR-19
Sodium (Na)-Dissolved			99.4		%		80-120	18-APR-19
Strontium (Sr)-Dissolved			99.9		%		80-120	18-APR-19
Sulfur (S)-Dissolved			91.1		%		80-120	18-APR-19
Tellurium (Te)-Dissolved			95.1		%		80-120	18-APR-19
Thallium (Tl)-Dissolved			84.1		%		80-120	18-APR-19
Thorium (Th)-Dissolved			104.1		%		80-120	18-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-MS-BRC-DIG-VA</b>	<b>Water</b>							
<b>Batch</b>	<b>R4605006</b>							
<b>WG3029326-2</b>	<b>LCS</b>							
Tin (Sn)-Dissolved			94.8		%		80-120	18-APR-19
Titanium (Ti)-Dissolved			92.6		%		80-120	18-APR-19
Tungsten (W)-Dissolved			88.5		%		80-120	18-APR-19
Uranium (U)-Dissolved			106.9		%		80-120	18-APR-19
Vanadium (V)-Dissolved			97.5		%		80-120	18-APR-19
Zinc (Zn)-Dissolved			98.2		%		80-120	18-APR-19
Zirconium (Zr)-Dissolved			94.4		%		80-120	18-APR-19
<b>WG3029326-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0030		mg/L		0.003	18-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-APR-19
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	18-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Copper (Cu)-Dissolved			<0.00050		mg/L		0.0005	18-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-APR-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-APR-19
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	18-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-APR-19
Silicon (Si)-Dissolved			<0.10		mg/L		0.1	18-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-MS-BRC-DIG-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4605006</b>							
<b>WG3029326-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-APR-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-APR-19
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	18-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-APR-19
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-APR-19
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	18-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-APR-19
Zinc (Zn)-Dissolved			<0.0030		mg/L		0.003	18-APR-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	18-APR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4608127</b>							
<b>WG3031741-7</b>	<b>DUP</b>	<b>L2257394-6</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-APR-19
<b>WG3031741-6</b>	<b>LCS</b>							
Ammonia as N			94.8		%		85-115	18-APR-19
<b>WG3031741-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-APR-19
<b>WG3031741-8</b>	<b>MS</b>	<b>L2257394-6</b>						
Ammonia as N			104.5		%		75-125	18-APR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4600973</b>							
<b>WG3027374-3</b>	<b>DUP</b>	<b>L2257394-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-7</b>	<b>DUP</b>	<b>L2257394-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-2</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	13-APR-19
<b>WG3027374-6</b>	<b>LCS</b>							
Nitrite (as N)			105.1		%		90-110	13-APR-19
<b>WG3027374-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-APR-19
<b>WG3027374-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4600973							
<b>WG3027374-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-APR-19
<b>WG3027374-4</b>	<b>MS</b>	<b>L2257394-4</b>						
Nitrite (as N)			102.5		%		75-125	13-APR-19
<b>WG3027374-8</b>	<b>MS</b>	<b>L2257394-5</b>						
Nitrite (as N)			104.8		%		75-125	13-APR-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4600973							
<b>WG3027374-3</b>	<b>DUP</b>	<b>L2257394-4</b>						
Nitrate (as N)			<0.0050	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-7</b>	<b>DUP</b>	<b>L2257394-5</b>						
Nitrate (as N)			<0.0050	RPD-NA	mg/L	N/A	20	13-APR-19
<b>WG3027374-2</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	13-APR-19
<b>WG3027374-6</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	13-APR-19
<b>WG3027374-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-APR-19
<b>WG3027374-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-APR-19
<b>WG3027374-4</b>	<b>MS</b>	<b>L2257394-4</b>						
Nitrate (as N)			98.4		%		75-125	13-APR-19
<b>WG3027374-8</b>	<b>MS</b>	<b>L2257394-5</b>						
Nitrate (as N)			100.6		%		75-125	13-APR-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4603208							
<b>WG3028874-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	16-APR-19
<b>WG3028874-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	16-APR-19
<b>WG3028874-8</b>	<b>DUP</b>	<b>L2257394-6</b>						
ORP		439	432	J	mV	7.0	15	16-APR-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4606254							
<b>WG3031426-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.3		%		80-120	21-APR-19
<b>WG3031426-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	21-APR-19





## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4601168							
WG3027387-12	DUP	L2257394-6						
pH		7.74	7.82	J	pH	0.08	0.2	14-APR-19
WG3027387-11	LCS							
pH			7.04		pH		6.9-7.1	14-APR-19
WG3027387-8	LCS							
pH			7.03		pH		6.9-7.1	14-APR-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4600532							
WG3027102-2	LCS							
Orthophosphate-Dissolved (as P)			98.2		%		80-120	13-APR-19
WG3027102-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-APR-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4600973							
WG3027374-3	DUP	L2257394-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	13-APR-19
WG3027374-7	DUP	L2257394-5						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	13-APR-19
WG3027374-2	LCS							
Sulfate (SO4)			101.4		%		90-110	13-APR-19
WG3027374-6	LCS							
Sulfate (SO4)			101.4		%		90-110	13-APR-19
WG3027374-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	12-APR-19
WG3027374-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-APR-19
WG3027374-4	MS	L2257394-4						
Sulfate (SO4)			100.5		%		75-125	13-APR-19
WG3027374-8	MS	L2257394-5						
Sulfate (SO4)			103.1		%		75-125	13-APR-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4605370							
WG3029337-3	DUP	L2257394-5						
Total Dissolved Solids		<10	<10	RPD-NA	mg/L	N/A	20	17-APR-19
WG3029337-2	LCS							
Total Dissolved Solids			93.9		%		85-115	17-APR-19
WG3029337-5	LCS							
Total Dissolved Solids			98.7		%		85-115	17-APR-19



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4605370							
<b>WG3029337-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	17-APR-19
<b>WG3029337-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	17-APR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4605381							
<b>WG3030378-13 LCS</b>								
Total Kjeldahl Nitrogen			96.3		%		75-125	17-APR-19
<b>WG3030378-17 LCS</b>								
Total Kjeldahl Nitrogen			95.7		%		75-125	17-APR-19
<b>WG3030378-2 LCS</b>								
Total Kjeldahl Nitrogen			98.2		%		75-125	17-APR-19
<b>WG3030378-21 LCS</b>								
Total Kjeldahl Nitrogen			94.7		%		75-125	17-APR-19
<b>WG3030378-24 LCS</b>								
Total Kjeldahl Nitrogen			95.6		%		75-125	17-APR-19
<b>WG3030378-5 LCS</b>								
Total Kjeldahl Nitrogen			97.0		%		75-125	17-APR-19
<b>WG3030378-9 LCS</b>								
Total Kjeldahl Nitrogen			98.6		%		75-125	17-APR-19
<b>WG3030378-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-12 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-16 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-20 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-23 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>WG3030378-8 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-APR-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4604163							
<b>WG3028354-10 LCS</b>								
Total Suspended Solids			98.2		%		85-115	16-APR-19
<b>WG3028354-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	16-APR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4600508							
<b>WG3026893-18 DUP</b>		<b>L2257394-1</b>						
Turbidity		0.45	0.49		NTU	8.3	15	12-APR-19
<b>WG3026893-17 LCS</b>								
Turbidity			94.5		%		85-115	12-APR-19
<b>WG3026893-16 MB</b>								
Turbidity			<0.10		NTU		0.1	12-APR-19

# Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 14 of 15

## Legend:

---

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

## Sample Parameter Qualifier Definitions:

---

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

---

# Quality Control Report

Workorder: L2257394

Report Date: 10-FEB-20

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	11-APR-19 10:10	16-APR-19 12:40	0.25	122	hours	EHTR-FM
	2	11-APR-19 10:30	16-APR-19 12:40	0.25	122	hours	EHTR-FM
	3	11-APR-19 10:30	16-APR-19 12:40	0.25	122	hours	EHTR-FM
	4	11-APR-19 11:30	16-APR-19 12:40	0.25	121	hours	EHTR-FM
	5	11-APR-19 12:00	16-APR-19 12:40	0.25	121	hours	EHTR-FM
	6	11-APR-19 11:30	16-APR-19 12:40	0.25	121	hours	EHTR-FM
pH							
	1	11-APR-19 10:10	14-APR-19 08:00	0.25	70	hours	EHTR-FM
	2	11-APR-19 10:30	14-APR-19 08:00	0.25	70	hours	EHTR-FM
	3	11-APR-19 10:30	14-APR-19 08:00	0.25	70	hours	EHTR-FM
	4	11-APR-19 11:30	14-APR-19 08:00	0.25	68	hours	EHTR-FM
	5	11-APR-19 12:00	14-APR-19 08:00	0.25	68	hours	EHTR-FM
	6	11-APR-19 11:30	14-APR-19 08:00	0.25	68	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2257394 were received on 12-APR-19 09:15.

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

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

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

<b>COC ID:</b> 20190411-1336		<b>TURNAROUND TIME:</b>		<b>RUSII:</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>			
Facility Name / Job# Fording River Operation				Lab Name ALS Calgary		Report Format / Distribution			
Project Manager Neil MacDonald				Lab Contact Lyndmyla Shvets		Email 1:	Excel	PDF	EDD
Email Neil.MacDonald@teck.com				Email Lyndmyla.Shvets@ALSGlobal.com		neil.macdonald@teck.com	X	X	X
Address PO Box 100				Address 2559 29 Street NE		Email 2:	X	X	X
City Elkford Province BC				City Calgary Province AB		chelsea.jensen@teck.com	X	X	X
Postal Code V0B 1H0 Country Canada				Postal Code T1Y 7B5 Country Canada		Email 4:	X	X	X
Phone Number 1-250-865-5204				Phone Number 403 407 1794		Jared.cayenne@teck.com	X	X	X
						Email 5:	X	X	X
						scott.roughhead@teck.com	X	X	X
						Email 6:			X
						teckcoal@equisonline.com			
						PO number			

**SAMPLE/DETAILS** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED									
								F	F	F	N	N	N				
								ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	ALS_Br-CL-MET-D-VA				
FR_09-04-A_QTR_2019-04-01_N	FR_09-04-A	WG		2019/04/11	10:10	G	5	1	1	1	1	1					
FR_09-04-B_QTR_2019-04-01_N	FR_09-04-B	WG		2019/04/11	10:30	G	5	1	1	1	1	1					
FR_DC1_QTR_2019-04-01_N	FR_DC1	WG		2019/04/11	10:30	G	5	1	1	1	1	1					
FR_FL.D_QTR_2019-04-01_N	FR_FL.D	WG		2019/04/11	11:30	G	5	1	1	1	1	1					
FR_TRP_QTR_2019-04-01_N	FR_TRP	WG		2019/04/11	12:00	G	5	1	1	1	1	1					
FR_TT43_QTR_2019-04-01_N	FR_TT43	WG		2019/04/11	11:30	G	5	1	1	1	1	1					

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:</b>	<b>REMOVED BY/AFFILIATION:</b> Jared Cayenne	<b>DATE/TIME:</b> April 11, 2019	<b>ACCEPTED BY/AFFILIATION:</b> <i>BC</i>	<b>DATE/TIME:</b> 4/12/19
--	---	-------------------------------------	--	------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>	<b>Mobile #</b>
Regular (default)	<input checked="" type="checkbox"/>	Jared Cayenne	2504219457
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>	<b>Sampler's Signature</b>	<b>Date/Time</b>
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>		April 11, 2019
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



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

Date Received: 17-MAY-19  
Report Date: 31-MAY-19 19:01 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2275412  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190516-1447  
Legal Site Desc:

Justine Buma-a  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2275412-1 WG 16-MAY-19 12:17 FR_DC2_QTR_201 9-04-01_FB-HG	L2275412-2 WG 16-MAY-19 12:17 FR_DC2_QTR_201 9-04-01_N	L2275412-3 WG 16-MAY-19 12:17 FR_HMW3_QTR_2 019-04-01_N	L2275412-4 WG 16-MAY-19 11:01 FR_HMW5_QTR_2 019-04-01_FB-HG	L2275412-5 WG 16-MAY-19 11:01 FR_HMW5_QTR_2 019-04-01_N
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		807	800	394
	Hardness (as CaCO3) (mg/L)		446	487	178
	pH (pH)		8.36	8.35	8.15
	ORP (mV)		348	315	249
	Total Suspended Solids (mg/L)		4.1	3.5	<1.0
	Total Dissolved Solids (mg/L)		557 <sup>DLHC</sup>	538 <sup>DLHC</sup>	223 <sup>DLHC</sup>
	Turbidity (NTU)		4.03	4.61	0.56
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		5.2	4.6	3.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		176	173	156
	Alkalinity, Carbonate (as CaCO3) (mg/L)		2.8	2.6	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		179	176	156
	Ammonia as N (mg/L)		0.0743	0.0753	0.063
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)		<0.50	<0.50	1.33
	Fluoride (F) (mg/L)		0.288	0.287	0.589
	Ion Balance (%)		102	112	104
	Nitrate (as N) (mg/L)		9.38	9.36	<0.0050
	Nitrite (as N) (mg/L)		0.0023	0.0024	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	0.273 <sup>TKNI</sup>	0.055
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	<0.0010	0.0182
	Phosphorus (P)-Total (mg/L)		0.0104	0.0090	0.0173
	Sulfate (SO4) (mg/L)		220	220	45.2
	Anion Sum (meq/L)		8.84	8.79	4.12
	Cation Sum (meq/L)		9.02	9.86	4.30
	Cation - Anion Balance (%)		1.0	5.8	2.1
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	<2.5 <sup>DLM</sup>
	Total Organic Carbon (mg/L)		<0.50	<0.50	<2.5 <sup>DLM</sup>
<b>Total Metals</b>	Mercury (Hg)-Total (ug/L)	<0.00050			<0.00050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	LAB
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	0.0065
	Antimony (Sb)-Dissolved (mg/L)		0.00017	0.00017	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00014	0.00014	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0276	0.0285	0.209
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2275412-1 WG 16-MAY-19 12:17 FR_DC2_QTR_201 9-04-01_FB-HG	L2275412-2 WG 16-MAY-19 12:17 FR_DC2_QTR_201 9-04-01_N	L2275412-3 WG 16-MAY-19 12:17 FR_HMW3_QTR_2 019-04-01_N	L2275412-4 WG 16-MAY-19 11:01 FR_HMW5_QTR_2 019-04-01_FB-HG	L2275412-5 WG 16-MAY-19 11:01 FR_HMW5_QTR_2 019-04-01_N
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.013	0.012	0.055	0.055
	Cadmium (Cd)-Dissolved (ug/L)	0.0217	0.0189	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	106	115	39.7	39.7
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.17	0.18	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.227	0.266	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0226	0.0226	0.234	0.234
	Magnesium (Mg)-Dissolved (mg/L)	43.7	48.7	19.1	19.1
	Manganese (Mn)-Dissolved (mg/L)	0.0763	0.0805	0.0463	0.0463
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	0.0000132		
	Mercury (Hg)-Dissolved (ug/L)			<0.00050	<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00105	0.00108	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00113	0.00118	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	1.70	1.87	0.744	0.744
	Selenium (Se)-Dissolved (ug/L)	51.7	55.5	1.32	1.32
	Silicon (Si)-Dissolved (mg/L)	1.29	1.47	2.42	2.42
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.24	1.28	16.5	16.5
	Strontium (Sr)-Dissolved (mg/L)	0.116	0.125	0.377	0.377
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00171	0.00189	0.000012	0.000012
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0050	<0.0010	<0.0010

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2275412-2, -3, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2275412-2, -3, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2275412-2, -3, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2275412-2, -3, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2275412-2, -3, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2275412-2, -3, -5

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

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

## Reference Information

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

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**PH-CL** Water pH APHA 4500 H-Electrode

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

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

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

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

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

## Reference Information

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

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

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

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

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

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

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

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

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

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

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

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

---

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

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

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

---

### Chain of Custody Numbers:

20190516-1447

### GLOSSARY OF REPORT TERMS

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

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

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

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

*mg/L - milligrams per litre.*

*< - Less than.*

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

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

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

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

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



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 1 of 9

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

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4645023							
WG3059205-5	LCS							
Acidity (as CaCO3)			107.8		%		85-115	24-MAY-19
WG3059205-4	MB							
Acidity (as CaCO3)			1.1		mg/L		2	24-MAY-19
Batch	R4645786							
WG3060200-2	LCS							
Acidity (as CaCO3)			105.9		%		85-115	27-MAY-19
WG3060200-1	MB							
Acidity (as CaCO3)			1.7		mg/L		2	27-MAY-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4645043							
WG3059163-8	LCS							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	24-MAY-19
WG3059163-7	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-MAY-19
Batch	R4645776							
WG3060183-2	LCS							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	27-MAY-19
WG3060183-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-MAY-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4639546							
WG3053772-2	LCS							
Beryllium (Be)-Dissolved			98.5		%		80-120	19-MAY-19
WG3053772-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAY-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4638183							
WG3053781-22	LCS							
Bromide (Br)			107.1		%		85-115	18-MAY-19
WG3053781-21	MB							
Bromide (Br)			<0.050		mg/L		0.05	18-MAY-19
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4644055							
WG3058565-2	LCS							
Dissolved Organic Carbon			101.1		%		80-120	24-MAY-19
WG3058565-1	MB							



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4644055							
<b>WG3058565-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4644055							
<b>WG3058565-2 LCS</b>								
Total Organic Carbon			105.5		%		80-120	24-MAY-19
<b>WG3058565-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4638183							
<b>WG3053781-22 LCS</b>								
Chloride (Cl)			104.4		%		90-110	18-MAY-19
<b>WG3053781-21 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	18-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4645043							
<b>WG3059163-8 LCS</b>								
Conductivity (@ 25C)			101.6		%		90-110	24-MAY-19
<b>WG3059163-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	24-MAY-19
Batch	R4645776							
<b>WG3060183-2 LCS</b>								
Conductivity (@ 25C)			104.6		%		90-110	27-MAY-19
<b>WG3060183-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	27-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4638183							
<b>WG3053781-22 LCS</b>								
Fluoride (F)			109.7		%		90-110	18-MAY-19
<b>WG3053781-21 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	18-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4641657							
<b>WG3054427-10 LCS</b>								
Mercury (Hg)-Dissolved			110.2		%		80-120	23-MAY-19



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4641693							
WG3054427-9	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-MAY-19
<b>HG-D-U-CVAF-VA</b>								
<b>Water</b>								
Batch	R4644879							
WG3059396-2	LCS							
Mercury (Hg)-Dissolved			90.4		%		80-120	27-MAY-19
WG3059396-1	MB	LF						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	27-MAY-19
WG3059396-4	MS	L2275412-5						
Mercury (Hg)-Dissolved			73.1		%		70-130	27-MAY-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
Batch	R4645122							
WG3059731-2	LCS							
Mercury (Hg)-Total			95.5		%		80-120	27-MAY-19
WG3059731-1	MB							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	27-MAY-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch	R4639546							
WG3053772-2	LCS							
Aluminum (Al)-Dissolved			96.4		%		80-120	19-MAY-19
Antimony (Sb)-Dissolved			97.4		%		80-120	19-MAY-19
Arsenic (As)-Dissolved			95.5		%		80-120	19-MAY-19
Barium (Ba)-Dissolved			86.8		%		80-120	19-MAY-19
Bismuth (Bi)-Dissolved			94.4		%		80-120	19-MAY-19
Boron (B)-Dissolved			100.9		%		80-120	19-MAY-19
Cadmium (Cd)-Dissolved			93.5		%		80-120	19-MAY-19
Calcium (Ca)-Dissolved			98.6		%		80-120	19-MAY-19
Chromium (Cr)-Dissolved			97.2		%		80-120	19-MAY-19
Cobalt (Co)-Dissolved			93.3		%		80-120	19-MAY-19
Copper (Cu)-Dissolved			93.6		%		80-120	19-MAY-19
Iron (Fe)-Dissolved			90.0		%		80-120	19-MAY-19
Lead (Pb)-Dissolved			97.3		%		80-120	19-MAY-19
Lithium (Li)-Dissolved			95.4		%		80-120	19-MAY-19
Magnesium (Mg)-Dissolved			99.1		%		80-120	19-MAY-19
Manganese (Mn)-Dissolved			99.5		%		80-120	19-MAY-19



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4639546</b>							
<b>WG3053772-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Dissolved			100.1		%		80-120	19-MAY-19
Nickel (Ni)-Dissolved			95.0		%		80-120	19-MAY-19
Potassium (K)-Dissolved			100.8		%		80-120	19-MAY-19
Selenium (Se)-Dissolved			96.4		%		80-120	19-MAY-19
Silicon (Si)-Dissolved			95.5		%		60-140	19-MAY-19
Silver (Ag)-Dissolved			92.5		%		80-120	19-MAY-19
Sodium (Na)-Dissolved			97.6		%		80-120	19-MAY-19
Strontium (Sr)-Dissolved			94.8		%		80-120	19-MAY-19
Thallium (Tl)-Dissolved			96.9		%		80-120	19-MAY-19
Tin (Sn)-Dissolved			95.0		%		80-120	19-MAY-19
Titanium (Ti)-Dissolved			94.3		%		80-120	19-MAY-19
Uranium (U)-Dissolved			97.1		%		80-120	19-MAY-19
Vanadium (V)-Dissolved			97.3		%		80-120	19-MAY-19
Zinc (Zn)-Dissolved			89.8		%		80-120	19-MAY-19
<b>WG3053772-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAY-19





## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4639546</b>							
<b>WG3053772-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4643934</b>							
<b>WG3058427-6</b>	<b>LCS</b>							
Ammonia as N			89.3		%		85-115	24-MAY-19
<b>WG3058427-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	24-MAY-19
<b>Batch</b>	<b>R4645751</b>							
<b>WG3060353-6</b>	<b>LCS</b>							
Ammonia as N			94.5		%		85-115	27-MAY-19
<b>WG3060353-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-MAY-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4638183</b>							
<b>WG3053781-22</b>	<b>LCS</b>							
Nitrite (as N)			108.4		%		90-110	18-MAY-19
<b>WG3053781-21</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	18-MAY-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4638183</b>							
<b>WG3053781-22</b>	<b>LCS</b>							
Nitrate (as N)			104.6		%		90-110	18-MAY-19
<b>WG3053781-21</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	18-MAY-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4640946							
WG3055822-5	CRM	CL-ORP						
ORP			225		mV		210-230	22-MAY-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4643570							
WG3058144-6	LCS							
Phosphorus (P)-Total			107.2		%		80-120	24-MAY-19
WG3058144-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4645043							
WG3059163-8	LCS							
pH			7.00		pH		6.9-7.1	24-MAY-19
Batch	R4645776							
WG3060183-2	LCS							
pH			6.99		pH		6.9-7.1	27-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4637491							
WG3052866-18	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	17-MAY-19
WG3052866-20	LCS							
Orthophosphate-Dissolved (as P)			100.1		%		80-120	17-MAY-19
WG3052866-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-MAY-19
WG3052866-19	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	17-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4638183							
WG3053781-22	LCS							
Sulfate (SO4)			105.1		%		90-110	18-MAY-19
WG3053781-21	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	18-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4641418							
<b>WG3055366-11</b>	<b>LCS</b>							
Total Dissolved Solids			96.8		%		85-115	22-MAY-19
<b>WG3055366-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	22-MAY-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4645024							
<b>WG3059675-13</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.3		%		75-125	27-MAY-19
<b>WG3059675-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.0		%		75-125	27-MAY-19
<b>WG3059675-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.3		%		75-125	27-MAY-19
<b>WG3059675-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.0		%		75-125	27-MAY-19
<b>WG3059675-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-19
<b>WG3059675-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-19
<b>WG3059675-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-19
<b>WG3059675-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-MAY-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4643446							
<b>WG3057118-2</b>	<b>LCS</b>							
Total Suspended Solids			90.0		%		85-115	23-MAY-19
<b>WG3057118-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-MAY-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4638813							
<b>WG3053670-2</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	18-MAY-19
<b>WG3053670-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-MAY-19

# Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 8 of 9

## Legend:

---

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

# Quality Control Report

Workorder: L2275412

Report Date: 31-MAY-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	2	16-MAY-19 12:17	22-MAY-19 13:30	0.25	145	hours	EHTR-FM
	3	16-MAY-19 12:17	22-MAY-19 13:30	0.25	145	hours	EHTR-FM
	5	16-MAY-19 11:01	22-MAY-19 13:30	0.25	146	hours	EHTR-FM
pH	2	16-MAY-19 12:17	24-MAY-19 09:00	0.25	189	hours	EHTR-FM
	3	16-MAY-19 12:17	24-MAY-19 09:00	0.25	189	hours	EHTR-FM
	5	16-MAY-19 11:01	27-MAY-19 17:00	0.25	270	hours	EHTR-FM

## Legend & Qualifier Definitions:

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

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2275412 were received on 17-MAY-19 09:00.


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

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

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

COC ID: **20190516-1447**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets		Email 1:	neil.macdonald@teck.com	X	X	X	
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	dylan.bagin@teck.com	X	X	X	
Address	PO Box 100			Address	2559 29 Street NE		Email 3:	chelsea.jensen@teck.com	X	X	X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.moughton@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794		PO number					

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS						
 L2275412-COFC								NONE	NONE	NONE	NONE	NONE	NONE	NONE	H2SO4	NONE						
								HG-T-U-CVAF-VA	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC	HG-D-U-CVAF-VA								
FR_DC2_QTR_2019-04-01_FB-HG	FR_DC2	WG		2019/05/16	12:17	G	1	1														
FR_DC2_QTR_2019-04-01_N	FR_DC2	WG		2019/05/16	12:17	G	5		1	1	1	1	1									
FR_HMW3_QTR_2019-04-01_N	FR_HMW3	WG		2019/05/16	12:17	G	5		1	1	1	1	1									
FR_HMW5_QTR_2019-04-01_FB-HG	FR_HMW5	WG		2019/05/16	11:01	G	1	1														
FR_HMW5_QTR_2019-04-01_N	FR_HMW5	WG		2019/05/16	11:01	G	5		1		1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	REQUISITIONED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	May 16, 2019	<i>[Signature]</i>	5/17 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Jared Cayenne	2504219457
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge		May 16, 2019
For Emergency <1 Day, ASAP or Weekend - Contact ALS		



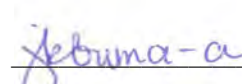
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 30-MAY-19  
Report Date: 07-JUN-19 16:22 (MT)  
Version: FINAL

Client Phone: 250-865-5204

## Certificate of Analysis

Lab Work Order #: L2282357  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190529-1507  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

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

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2282357-1	L2282357-2	L2282357-3
		Description	WG	WG	WG
		Sampled Date	29-MAY-19	29-MAY-19	29-MAY-19
		Sampled Time	12:39	12:20	14:02
		Client ID	FR_HMW1D_QTR_2019-04-01_N	FR_HMW1S_QTR_2019-04-01_N	FR_HMW2_QTR_2019-04-01_N
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	3990	3890	3380	
	Hardness (as CaCO3) (mg/L)			2370	
	Hardness (as CaCO3)	2790	2750		
	pH (pH)	7.89	7.93	7.89	
	ORP (mV)	421	318	421	
	Total Suspended Solids (mg/L)	4.2	6.4	29.0	
	Total Dissolved Solids (mg/L)	3840 <sup>DLHC</sup>	3790 <sup>DLHC</sup>	3200 <sup>DLHC</sup>	
	Turbidity (NTU)	0.68	0.30	18.5	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	32.6	33.4	29.3	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	396	369	381	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	396	369	381	
	Ammonia as N (mg/L)	0.208	0.780 <sup>DLHC</sup>	0.0091 <sup>DLHC</sup>	
	Bromide (Br) (mg/L)	<0.50 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	
	Chloride (Cl) (mg/L)	<5.0 <sup>DLHC</sup>	2.7 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	
	Fluoride (F) (mg/L)	0.28 <sup>DLHC</sup>	0.24 <sup>DLHC</sup>	0.20 <sup>DLHC</sup>	
	Ion Balance (%)	96.5	107	97.2	
	Nitrate (as N) (mg/L)	133 <sup>DLHC</sup>	120 <sup>DLHC</sup>	75.2 <sup>DLHC</sup>	
	Nitrite (as N) (mg/L)	0.047 <sup>DLHC</sup>	0.0053 <sup>DLHC</sup>	0.0164 <sup>DLHC</sup>	
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	0.726 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0026 <sup>RRV</sup>	<0.0010	0.0094	
	Phosphorus (P)-Total (mg/L)	<0.0020 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>	0.0366 <sup>DLHC</sup>	
	Sulfate (SO4) (mg/L)	1950	1710	1730	
	Anion Sum (meq/L)	58.1	51.6	49.1	
	Cation Sum (meq/L)	56.0	55.2	47.7	
	Cation - Anion Balance (%)	-1.8	3.4	-1.4	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.29	1.37	0.87
Total Organic Carbon (mg/L)		1.84	1.41	2.12	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 <sup>DLA</sup>	0.00034 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
	Arsenic (As)-Dissolved (mg/L)	<0.00050 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	
	Barium (Ba)-Dissolved (mg/L)	0.0110	0.0108	0.0125	
	Beryllium (Be)-Dissolved (ug/L)	<0.10 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2282357-1	L2282357-2	L2282357-3
		Description	WG	WG	WG
		Sampled Date	29-MAY-19	29-MAY-19	29-MAY-19
		Sampled Time	12:39	12:20	14:02
		Client ID	FR_HMW1D_QTR_2019-04-01_N	FR_HMW1S_QTR_2019-04-01_N	FR_HMW2_QTR_2019-04-01_N
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<sup>DLA</sup> <0.00025	<sup>DLA</sup> <0.00010	<sup>DLA</sup> <0.00010
	Boron (B)-Dissolved (mg/L)		<sup>DLA</sup> <0.050	0.048	0.051
	Cadmium (Cd)-Dissolved (ug/L)		0.059	0.103	0.360
	Calcium (Ca)-Dissolved (mg/L)		575	572	492
	Chromium (Cr)-Dissolved (mg/L)		<sup>DLA</sup> <0.00050	<sup>DLA</sup> <0.00020	<sup>DLA</sup> <0.00020
	Cobalt (Co)-Dissolved (ug/L)		4.85	4.52	0.24
	Copper (Cu)-Dissolved (mg/L)		<sup>DLA</sup> <0.0010	<sup>DLA</sup> <0.00050	<sup>DLA</sup> <0.00050
	Iron (Fe)-Dissolved (mg/L)		<sup>DLA</sup> <0.050	<sup>DLA</sup> <0.020	<sup>DLA</sup> <0.020
	Lead (Pb)-Dissolved (mg/L)		<sup>DLA</sup> <0.00025	<sup>DLA</sup> <0.00010	<sup>DLA</sup> <0.00010
	Lithium (Li)-Dissolved (mg/L)		0.0887	0.100	0.136
	Magnesium (Mg)-Dissolved (mg/L)		328	320	278
	Manganese (Mn)-Dissolved (mg/L)		0.569	0.369	0.193
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00087	0.00092	0.00043
	Nickel (Ni)-Dissolved (mg/L)		0.0352	0.0426	0.0159
	Potassium (K)-Dissolved (mg/L)		6.84	7.89	7.03
	Selenium (Se)-Dissolved (ug/L)		55.4	194	510
	Silicon (Si)-Dissolved (mg/L)		2.61	2.51	2.03
	Silver (Ag)-Dissolved (mg/L)		<sup>DLA</sup> <0.000050	<sup>DLA</sup> <0.000020	<sup>DLA</sup> <0.000020
	Sodium (Na)-Dissolved (mg/L)		2.33	2.30	2.20
	Strontium (Sr)-Dissolved (mg/L)		0.335	0.328	0.270
	Thallium (Tl)-Dissolved (mg/L)		<sup>DLA</sup> <0.000050	0.000030	0.000056
	Tin (Sn)-Dissolved (mg/L)		<sup>DLA</sup> <0.00050	<sup>DLA</sup> <0.00020	<sup>DLA</sup> <0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
Uranium (U)-Dissolved (mg/L)		0.0127	0.0125	0.0105	
Vanadium (V)-Dissolved (mg/L)		<sup>DLA</sup> <0.0025	<sup>DLA</sup> <0.0010	<sup>DLA</sup> <0.0010	
Zinc (Zn)-Dissolved (mg/L)		0.0060	0.0095	0.0083	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2282357-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2282357-1, -2, -3

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190529-1507

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*  
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*  
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**  
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660564</b>							
<b>WG3070034-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	06-JUN-19
<b>WG3070034-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.4		%		85-115	06-JUN-19
<b>WG3070034-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	06-JUN-19
<b>WG3070034-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	06-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661465</b>							
<b>WG3070902-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	06-JUN-19
<b>WG3070902-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654589</b>							
<b>WG3065539-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.8		%		80-120	04-JUN-19
<b>WG3065539-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653397</b>							
<b>WG3064909-10</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	31-MAY-19
<b>WG3064909-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4656382</b>							
<b>WG3067148-7</b>	<b>DUP</b>	<b>L2282357-2</b>						
Dissolved Organic Carbon		1.37	1.23		mg/L	10	20	03-JUN-19
<b>WG3067148-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.3		%		80-120	03-JUN-19
<b>WG3067148-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-JUN-19
<b>WG3067148-8</b>	<b>MS</b>	<b>L2282357-1</b>						
Dissolved Organic Carbon			98.1		%		70-130	03-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4656382</b>							
<b>WG3067148-7</b>	<b>DUP</b>	<b>L2282357-2</b>						
Total Organic Carbon		1.41	1.51		mg/L	6.7	20	03-JUN-19
<b>WG3067148-6</b>	<b>LCS</b>							
Total Organic Carbon			101.6		%		80-120	03-JUN-19
<b>WG3067148-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-JUN-19
<b>WG3067148-8</b>	<b>MS</b>	<b>L2282357-1</b>						
Total Organic Carbon			99.5		%		70-130	03-JUN-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4653397</b>							
<b>WG3064909-10</b>	<b>LCS</b>							
Chloride (Cl)			100.4		%		90-110	31-MAY-19
<b>WG3064909-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661465</b>							
<b>WG3070902-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.1		%		90-110	06-JUN-19
<b>WG3070902-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4653397</b>							
<b>WG3064909-10</b>	<b>LCS</b>							
Fluoride (F)			104.6		%		90-110	31-MAY-19
<b>WG3064909-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4655189</b>							
<b>WG3066173-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.6		%		80-120	04-JUN-19
<b>WG3066173-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4654589</b>							
<b>WG3065539-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	04-JUN-19
Antimony (Sb)-Dissolved			95.8		%		80-120	04-JUN-19



## Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654589</b>							
<b>WG3065539-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			97.4		%		80-120	04-JUN-19
Barium (Ba)-Dissolved			98.8		%		80-120	04-JUN-19
Bismuth (Bi)-Dissolved			95.3		%		80-120	04-JUN-19
Boron (B)-Dissolved			92.6		%		80-120	04-JUN-19
Cadmium (Cd)-Dissolved			91.3		%		80-120	04-JUN-19
Calcium (Ca)-Dissolved			96.8		%		80-120	04-JUN-19
Chromium (Cr)-Dissolved			97.3		%		80-120	04-JUN-19
Cobalt (Co)-Dissolved			96.7		%		80-120	04-JUN-19
Copper (Cu)-Dissolved			95.7		%		80-120	04-JUN-19
Iron (Fe)-Dissolved			88.9		%		80-120	04-JUN-19
Lead (Pb)-Dissolved			95.2		%		80-120	04-JUN-19
Lithium (Li)-Dissolved			89.0		%		80-120	04-JUN-19
Magnesium (Mg)-Dissolved			103.1		%		80-120	04-JUN-19
Manganese (Mn)-Dissolved			97.4		%		80-120	04-JUN-19
Molybdenum (Mo)-Dissolved			98.7		%		80-120	04-JUN-19
Nickel (Ni)-Dissolved			96.9		%		80-120	04-JUN-19
Potassium (K)-Dissolved			105.7		%		80-120	04-JUN-19
Selenium (Se)-Dissolved			103.1		%		80-120	04-JUN-19
Silicon (Si)-Dissolved			103.3		%		60-140	04-JUN-19
Silver (Ag)-Dissolved			94.7		%		80-120	04-JUN-19
Sodium (Na)-Dissolved			100.7		%		80-120	04-JUN-19
Strontium (Sr)-Dissolved			101.1		%		80-120	04-JUN-19
Thallium (Tl)-Dissolved			93.1		%		80-120	04-JUN-19
Tin (Sn)-Dissolved			92.2		%		80-120	04-JUN-19
Titanium (Ti)-Dissolved			95.6		%		80-120	04-JUN-19
Uranium (U)-Dissolved			95.0		%		80-120	04-JUN-19
Vanadium (V)-Dissolved			98.0		%		80-120	04-JUN-19
Zinc (Zn)-Dissolved			91.9		%		80-120	04-JUN-19
<b>WG3065539-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-19



## Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654589</b>							
<b>WG3065539-1</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660135</b>							
<b>WG3069432-10</b>	<b>LCS</b>							
Ammonia as N			92.8		%		85-115	05-JUN-19
<b>WG3069432-6</b>	<b>LCS</b>							
Ammonia as N			101.5		%		85-115	05-JUN-19
<b>WG3069432-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-19
<b>WG3069432-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-JUN-19







## Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4653397							
<b>WG3064909-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4659889							
<b>WG3067059-8 LCS</b>								
Total Dissolved Solids			95.4		%		85-115	04-JUN-19
<b>WG3067059-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	04-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4660411							
<b>WG3069884-2 LCS</b>								
Total Kjeldahl Nitrogen			103.0		%		75-125	06-JUN-19
<b>WG3069884-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4660306							
<b>WG3068648-8 LCS</b>								
Total Suspended Solids			108.1		%		85-115	05-JUN-19
<b>WG3068648-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4653349							
<b>WG3064559-20 LCS</b>								
Turbidity			95.0		%		85-115	31-MAY-19
<b>WG3064559-19 MB</b>								
Turbidity			<0.10		NTU		0.1	31-MAY-19

# Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2282357

Report Date: 07-JUN-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	29-MAY-19 12:39	05-JUN-19 14:00	0.25	169	hours	EHTR-FM
	2	29-MAY-19 12:20	05-JUN-19 14:00	0.25	170	hours	EHTR-FM
	3	29-MAY-19 14:02	05-JUN-19 14:00	0.25	168	hours	EHTR-FM
pH	1	29-MAY-19 12:39	06-JUN-19 15:00	0.25	194	hours	EHTR-FM
	2	29-MAY-19 12:20	06-JUN-19 15:00	0.25	195	hours	EHTR-FM
	3	29-MAY-19 14:02	06-JUN-19 15:00	0.25	193	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2282357 were received on 30-MAY-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

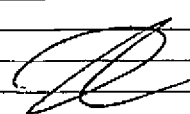
COC ID: 20190529-1507

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.mcdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dylan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC							
FR_HMW1D_QTR_2019-04-01_N	FR_HMW1D	WG		2019/05/29	12:39	G	5	1	1	1	1	1							
FR_HMW1S_QTR_2019-04-01_N	FR_HMW1S	WG		2019/05/29	12:20	G	5	1	1	1	1	1							
FR_HMW2_QTR_2019-04-01_N	FR_HMW2	WG		2019/05/29	14:02	G	5	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	May 29, 2019		5/30 9:15
<b>SERVICE REQUEST (rush - subject to availability)</b>	Sampler's Name	Jared Cayenne	Mobile #	2504219457
Regular (default) X	Sampler's Signature		Date/Time	May 29, 2019
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

96



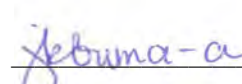
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 01-JUN-19  
Report Date: 13-JUN-19 14:26 (MT)  
Version: FINAL REV. 2

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2283636  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20190531  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2283636-1 WG 31-MAY-19 09:38 FR_CB_1A_2019-05-31_NP	L2283636-2 WG 31-MAY-19 09:43 FR_DC1_2019-05-31_NP	L2283636-3 WG 31-MAY-19 09:48 FR_FLB_2019-05-31_NP	L2283636-4 WG 31-MAY-19 11:35 FR_GCMW_1B_2019-05-31_NP	L2283636-5 WG 31-MAY-19 13:50 FR_TB_1A_2019-05-31_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	579	578	<2.0	759	937
	Hardness (as CaCO3) (mg/L)	304	309	<0.50	90.0	534
	pH (pH)	8.27	8.29	6.31	8.64	8.06
	ORP (mV)	267	213	450	225	286
	Total Suspended Solids (mg/L)	15.0	19.3	<1.0	6.2	531
	Total Dissolved Solids (mg/L)	315	308	<10	448	614
	Turbidity (NTU)	17.9	15.1	<0.10	17.4	428
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.6	3.5	<1.0	<1.0	31.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	256	239	<1.0	328	563
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	4.0	<1.0	25.2	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	256	243	<1.0	353	563
	Ammonia as N (mg/L)	1.21	1.05	0.0075	0.0739	5.18
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.143	<0.050
	Chloride (Cl) (mg/L)	34.1	34.0	<0.50	13.2	1.17
	Fluoride (F) (mg/L)	0.403	0.400	<0.020	1.37	0.463
	Ion Balance (%)	117	124	0.0	112	132
	Nitrate (as N) (mg/L)	0.0181	0.0191	<0.0050	<0.0050	0.0202
	Nitrite (as N) (mg/L)	0.0030	0.0029	<0.0010	<0.0010	0.0012
	Total Kjeldahl Nitrogen (mg/L)	1.84	1.25	<0.050	0.385	6.0
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0666
	Phosphorus (P)-Total (mg/L)	0.0746	0.0436	<0.0020	0.0321	0.633
	Sulfate (SO4) (mg/L)	0.70	0.69	<0.30	23.6	0.38
	Anion Sum (meq/L)	6.11	5.85	<0.10	7.99	11.3
	Cation Sum (meq/L)	7.14	7.26	<0.10	8.94	15.0
	Cation - Anion Balance (%)	7.8	10.7	0.0	5.6	13.9
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.40	1.47	<0.50	5.76
Total Organic Carbon (mg/L)		2.36	2.95	<0.50	6.29	4.66
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.0000242
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0092	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00023	0.00011
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00022	<0.00010	0.00204	0.00083
	Barium (Ba)-Dissolved (mg/L)	4.83	5.08	0.00034	0.0945	18.9
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2283636-6 WG 31-MAY-19 09:53 FR_TRP_2019-05-31_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	7.08			
	ORP (mV)	358			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

13-JUN-19 14:26 (MT)

Version: FINAL REV. 2

Sample ID Description Sampled Date Sampled Time Client ID		L2283636-1 WG 31-MAY-19 09:38 FR_CB_1A_2019-05-31_NP	L2283636-2 WG 31-MAY-19 09:43 FR_DC1_2019-05-31_NP	L2283636-3 WG 31-MAY-19 09:48 FR_FLB_2019-05-31_NP	L2283636-4 WG 31-MAY-19 11:35 FR_GCMW_1B_2019-05-31_NP	L2283636-5 WG 31-MAY-19 13:50 FR_TB_1A_2019-05-31_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.028	0.028	<0.010	0.081	0.066
	Cadmium (Cd)-Dissolved (ug/L)	0.0079	0.0065	<0.0050	<0.025 <sup>DLM</sup>	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	70.2	69.7	<0.050	24.1	132
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00012 <sup>RRV</sup>	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	0.25	0.16
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00060
	Iron (Fe)-Dissolved (mg/L)	0.871	0.880	<0.010	0.164	3.92
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.140	0.138	<0.0010	0.126	1.40
	Magnesium (Mg)-Dissolved (mg/L)	31.2	32.9	<0.10	7.27	49.6
	Manganese (Mn)-Dissolved (mg/L)	0.0339	0.0348	<0.00010	0.144	0.107
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00201	0.00192	<0.000050	0.0310	0.000400
	Nickel (Ni)-Dissolved (mg/L)	0.00104	0.00107	<0.00050	0.00268	0.00168
	Potassium (K)-Dissolved (mg/L)	3.59	3.61	<0.050	1.78	14.7
	Selenium (Se)-Dissolved (ug/L)	0.080	0.060	<0.050	2.00	0.106
	Silicon (Si)-Dissolved (mg/L)	3.25	3.36	<0.050	3.63	3.55
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	19.4	19.7	0.152 <sup>RRV</sup>	163	76.6
	Strontium (Sr)-Dissolved (mg/L)	0.953	0.950	<0.00020	0.213	1.36
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00017 <sup>RRV</sup>	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000067	0.000065	<0.000010	0.00214	0.000102
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0037	0.0038	<0.0010	0.0012	0.0133

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2283636-6 WG 31-MAY-19 09:53 FR_TRP_2019-05-31_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2283636-3, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2283636-3, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2283636-3, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2283636-3, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2283636-3, -6
Matrix Spike	Phosphorus (P)-Total	MS-B	L2283636-1, -2, -3, -4, -5, -6
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L2283636-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190531

**GLOSSARY OF REPORT TERMS**

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 1 of 12

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661868</b>							
<b>WG3071606-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	07-JUN-19
<b>WG3071606-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.4		%		85-115	07-JUN-19
<b>WG3071606-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-JUN-19
<b>WG3071606-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	07-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662795</b>							
<b>WG3072356-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.7		%		85-115	08-JUN-19
<b>WG3072356-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.9		%		80-120	05-JUN-19
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653596</b>							
<b>WG3065159-15</b>	<b>DUP</b>	<b>L2283636-6</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3065159-14</b>	<b>LCS</b>							
Bromide (Br)			100.1		%		85-115	01-JUN-19
<b>WG3065159-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-JUN-19
<b>WG3065159-16</b>	<b>MS</b>	<b>L2283636-6</b>						
Bromide (Br)			92.7		%		75-125	01-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659069</b>							
<b>WG3068276-23</b>	<b>DUP</b>	<b>L2283636-2</b>						
Dissolved Organic Carbon		1.47	1.44		mg/L	2.2	20	04-JUN-19
<b>WG3068276-22</b>	<b>LCS</b>							
Dissolved Organic Carbon			85.6		%		80-120	06-JUN-19
<b>WG3068276-21</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659069</b>							
<b>WG3068276-21 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-JUN-19
<b>WG3068276-24 MS</b>		<b>L2283636-3</b>						
Dissolved Organic Carbon			93.7		%		70-130	04-JUN-19
<b>Batch</b>	<b>R4660317</b>							
<b>WG3069773-2 LCS</b>								
Dissolved Organic Carbon			86.5		%		80-120	05-JUN-19
<b>WG3069773-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659069</b>							
<b>WG3068276-23 DUP</b>		<b>L2283636-2</b>						
Total Organic Carbon		2.95	3.55		mg/L	18	20	04-JUN-19
<b>WG3068276-22 LCS</b>								
Total Organic Carbon			88.5		%		80-120	04-JUN-19
<b>WG3068276-21 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>WG3068276-24 MS</b>		<b>L2283636-3</b>						
Total Organic Carbon			97.1		%		70-130	04-JUN-19
<b>Batch</b>	<b>R4660317</b>							
<b>WG3069773-2 LCS</b>								
Total Organic Carbon			89.9		%		80-120	05-JUN-19
<b>WG3069773-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	05-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653596</b>							
<b>WG3065159-15 DUP</b>		<b>L2283636-6</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3065159-14 LCS</b>								
Chloride (Cl)			99.5		%		90-110	01-JUN-19
<b>WG3065159-13 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	01-JUN-19
<b>WG3065159-16 MS</b>		<b>L2283636-6</b>						
Chloride (Cl)			91.8		%		75-125	01-JUN-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R4662795								
WG3072356-8 LCS								
Conductivity (@ 25C)			106.3		%		90-110	08-JUN-19
WG3072356-7 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R4653596								
WG3065159-15 DUP								
Fluoride (F)		L2283636-6	<0.020	RPD-NA	mg/L	N/A	20	01-JUN-19
WG3065159-14 LCS								
Fluoride (F)			104.4		%		90-110	01-JUN-19
WG3065159-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	01-JUN-19
WG3065159-16 MS								
Fluoride (F)		L2283636-6	95.5		%		75-125	01-JUN-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch R4659877								
WG3067414-26 LCS								
Mercury (Hg)-Dissolved			95.6		%		80-120	06-JUN-19
WG3067414-25 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-JUN-19
WG3067414-28 MS								
Mercury (Hg)-Dissolved			89.9		%		70-130	06-JUN-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
Batch R4660836								
WG3070475-14 DUP								
Mercury (Hg)-Total		L2283636-1	<0.0000050	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3070475-2 LCS								
Mercury (Hg)-Total			97.5		%		80-120	07-JUN-19
WG3070475-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	07-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch R4659067								
WG3067248-2 LCS								
Aluminum (Al)-Dissolved			99.7		%		80-120	05-JUN-19
Antimony (Sb)-Dissolved			96.0		%		80-120	05-JUN-19
Arsenic (As)-Dissolved			99.1		%		80-120	05-JUN-19
Barium (Ba)-Dissolved			105.7		%		80-120	05-JUN-19





## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			117.7		%		80-120	05-JUN-19
Boron (B)-Dissolved			91.5		%		80-120	05-JUN-19
Cadmium (Cd)-Dissolved			97.6		%		80-120	05-JUN-19
Calcium (Ca)-Dissolved			95.9		%		80-120	05-JUN-19
Chromium (Cr)-Dissolved			102.5		%		80-120	05-JUN-19
Cobalt (Co)-Dissolved			99.98		%		80-120	05-JUN-19
Copper (Cu)-Dissolved			96.8		%		80-120	05-JUN-19
Iron (Fe)-Dissolved			89.1		%		80-120	05-JUN-19
Lead (Pb)-Dissolved			101.1		%		80-120	05-JUN-19
Lithium (Li)-Dissolved			93.7		%		80-120	05-JUN-19
Magnesium (Mg)-Dissolved			104.4		%		80-120	05-JUN-19
Manganese (Mn)-Dissolved			97.7		%		80-120	05-JUN-19
Molybdenum (Mo)-Dissolved			103.5		%		80-120	05-JUN-19
Nickel (Ni)-Dissolved			97.8		%		80-120	05-JUN-19
Potassium (K)-Dissolved			101.0		%		80-120	05-JUN-19
Selenium (Se)-Dissolved			97.3		%		80-120	05-JUN-19
Silicon (Si)-Dissolved			100.3		%		60-140	05-JUN-19
Silver (Ag)-Dissolved			98.4		%		80-120	05-JUN-19
Sodium (Na)-Dissolved			117.4		%		80-120	05-JUN-19
Strontium (Sr)-Dissolved			97.9		%		80-120	05-JUN-19
Thallium (Tl)-Dissolved			100.5		%		80-120	05-JUN-19
Tin (Sn)-Dissolved			99.3		%		80-120	05-JUN-19
Titanium (Ti)-Dissolved			95.4		%		80-120	05-JUN-19
Uranium (U)-Dissolved			100.0		%		80-120	05-JUN-19
Vanadium (V)-Dissolved			101.5		%		80-120	05-JUN-19
Zinc (Zn)-Dissolved			97.9		%		80-120	05-JUN-19
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	05-JUN-19



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
<b>Batch</b>	<b>R4659128</b>							
<b>WG3068453-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.9		%		80-120	05-JUN-19
Antimony (Sb)-Dissolved			103.0		%		80-120	05-JUN-19
Arsenic (As)-Dissolved			102.0		%		80-120	05-JUN-19
Barium (Ba)-Dissolved			104.2		%		80-120	05-JUN-19
Bismuth (Bi)-Dissolved			107.2		%		80-120	05-JUN-19
Boron (B)-Dissolved			95.1		%		80-120	05-JUN-19
Cadmium (Cd)-Dissolved			103.6		%		80-120	05-JUN-19
Calcium (Ca)-Dissolved			97.6		%		80-120	05-JUN-19
Chromium (Cr)-Dissolved			101.8		%		80-120	05-JUN-19
Cobalt (Co)-Dissolved			101.6		%		80-120	05-JUN-19



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659128</b>							
<b>WG3068453-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			99.2		%		80-120	05-JUN-19
Iron (Fe)-Dissolved			100.6		%		80-120	05-JUN-19
Lead (Pb)-Dissolved			108.7		%		80-120	05-JUN-19
Lithium (Li)-Dissolved			97.4		%		80-120	05-JUN-19
Magnesium (Mg)-Dissolved			106.4		%		80-120	05-JUN-19
Manganese (Mn)-Dissolved			101.4		%		80-120	05-JUN-19
Molybdenum (Mo)-Dissolved			107.8		%		80-120	05-JUN-19
Nickel (Ni)-Dissolved			99.7		%		80-120	05-JUN-19
Potassium (K)-Dissolved			103.5		%		80-120	05-JUN-19
Selenium (Se)-Dissolved			107.6		%		80-120	05-JUN-19
Silicon (Si)-Dissolved			111.0		%		60-140	05-JUN-19
Silver (Ag)-Dissolved			104.7		%		80-120	05-JUN-19
Sodium (Na)-Dissolved			106.7		%		80-120	05-JUN-19
Strontium (Sr)-Dissolved			105.8		%		80-120	05-JUN-19
Thallium (Tl)-Dissolved			107.2		%		80-120	05-JUN-19
Tin (Sn)-Dissolved			102.7		%		80-120	05-JUN-19
Titanium (Ti)-Dissolved			99.9		%		80-120	05-JUN-19
Uranium (U)-Dissolved			109.0		%		80-120	05-JUN-19
Vanadium (V)-Dissolved			104.3		%		80-120	05-JUN-19
Zinc (Zn)-Dissolved			103.5		%		80-120	05-JUN-19
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
<b>WG3068453-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-19



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659128</b>							
<b>WG3068453-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662746</b>							
<b>WG3072627-10</b>	<b>LCS</b>							
Ammonia as N			107.1		%		85-115	07-JUN-19
<b>WG3072627-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653596</b>							
<b>WG3065159-15</b>	<b>DUP</b>	<b>L2283636-6</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3065159-14</b>	<b>LCS</b>							
Nitrite (as N)			102.3		%		90-110	01-JUN-19
<b>WG3065159-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-JUN-19
<b>WG3065159-16</b>	<b>MS</b>	<b>L2283636-6</b>						
Nitrite (as N)			93.9		%		75-125	01-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4653596</b>								
<b>WG3065159-15</b>	<b>DUP</b>	<b>L2283636-6</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3065159-14</b>	<b>LCS</b>							
Nitrate (as N)			93.3		%		90-110	01-JUN-19
<b>WG3065159-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-JUN-19
<b>WG3065159-16</b>	<b>MS</b>	<b>L2283636-6</b>						
Nitrate (as N)			86.0		%		75-125	01-JUN-19
<b>ORP-CL</b>								
<b>Batch R4662150</b>								
<b>WG3071405-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	07-JUN-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4661625</b>								
<b>WG3071299-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.5		%		80-120	07-JUN-19
<b>WG3071299-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-JUN-19
<b>PH-CL</b>								
<b>Batch R4662795</b>								
<b>WG3072356-8</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	08-JUN-19
<b>PO4-DO-L-COL-CL</b>								
<b>Batch R4653712</b>								
<b>WG3065128-19</b>	<b>DUP</b>	<b>L2283636-4</b>						
Orthophosphate-Dissolved (as P)		<0.0010	0.0018	RPD-NA	mg/L	N/A	20	02-JUN-19
<b>WG3065128-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			96.6		%		80-120	02-JUN-19
<b>WG3065128-17</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-JUN-19
<b>WG3065128-20</b>	<b>MS</b>	<b>L2283636-5</b>						
Orthophosphate-Dissolved (as P)			N/A	MS-B	%		-	02-JUN-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Batch R4653596</b>								
<b>WG3065159-15</b>	<b>DUP</b>	<b>L2283636-6</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3065159-14</b>	<b>LCS</b>							
Sulfate (SO4)			100.1		%		90-110	01-JUN-19
<b>WG3065159-13</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-JUN-19
<b>WG3065159-16</b>	<b>MS</b>	<b>L2283636-6</b>						
Sulfate (SO4)			92.5		%		75-125	01-JUN-19
<b>SOLIDS-TDS-CL</b>								
<b>Batch R4661502</b>								
<b>WG3068137-11</b>	<b>LCS</b>							
Total Dissolved Solids			94.4		%		85-115	05-JUN-19
<b>WG3068137-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	05-JUN-19
<b>TKN-L-F-CL</b>								
<b>Batch R4661191</b>								
<b>WG3070884-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.8		%		75-125	07-JUN-19
<b>WG3070884-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	07-JUN-19
<b>WG3070884-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.2		%		75-125	07-JUN-19
<b>WG3070884-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>TSS-L-CL</b>								
<b>Batch R4661216</b>								
<b>WG3069523-6</b>	<b>DUP</b>	<b>L2283636-5</b>						
Total Suspended Solids		531	525		mg/L	1.1	20	06-JUN-19
<b>WG3069523-5</b>	<b>LCS</b>							
Total Suspended Solids			102.6		%		85-115	06-JUN-19
<b>WG3069523-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	06-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653557</b>							
<b>WG3065088-9</b>	<b>DUP</b>	<b>L2283636-5</b>						
Turbidity		428	425		NTU	0.7	15	02-JUN-19
<b>WG3065088-5</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	02-JUN-19
<b>WG3065088-8</b>	<b>LCS</b>							
Turbidity			101.5		%		85-115	02-JUN-19
<b>WG3065088-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	02-JUN-19
<b>WG3065088-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	02-JUN-19

# Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2283636

Report Date: 13-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	31-MAY-19 09:38	07-JUN-19 14:00	0.25	172	hours	EHTR-FM
	2	31-MAY-19 09:43	07-JUN-19 14:00	0.25	172	hours	EHTR-FM
	3	31-MAY-19 09:48	07-JUN-19 14:00	0.25	172	hours	EHTR-FM
	4	31-MAY-19 11:35	07-JUN-19 14:00	0.25	170	hours	EHTR-FM
	5	31-MAY-19 13:50	07-JUN-19 14:00	0.25	168	hours	EHTR-FM
	6	31-MAY-19 09:53	07-JUN-19 14:00	0.25	172	hours	EHTR-FM
pH							
	1	31-MAY-19 09:38	08-JUN-19 11:00	0.25	193	hours	EHTR-FM
	2	31-MAY-19 09:43	08-JUN-19 11:00	0.25	193	hours	EHTR-FM
	3	31-MAY-19 09:48	08-JUN-19 11:00	0.25	193	hours	EHTR-FM
	4	31-MAY-19 11:35	08-JUN-19 11:00	0.25	192	hours	EHTR-FM
	5	31-MAY-19 13:50	08-JUN-19 11:00	0.25	189	hours	EHTR-FM
	6	31-MAY-19 09:53	08-JUN-19 11:00	0.25	193	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2283636 were received on 01-JUN-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 20190531

TURNAROUND TIME: Regular

RUSH:

FACILITY / JOB INFORMATION				LABORATORY				OTHER INFO			
Facility Name / Job# Teck Coal				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Leilah Tate				Lab Contact Lyudmyla Shvets				Excel PDF EDD			
Email Leilah.Tate@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 1: Leilah.Tate@teck.com X X X			
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE				Email 2: teckcoal@equisonline.com X X X			
City Calgary Province AB				City Calgary Province AB				Email 3: gregory.jones@golder.com X X X			
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 4: neil.macdonald@teck.com X X X			
Phone Number 1-604-831-3830				Phone Number 403 407 1794				PO number VPO00617299			



L2283636-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS RESULTS												
								NONE	H2SO4	H2SO4		HNO3	HCL		HCL					
FR-CB-1A-2019-05-31-NP	FR-CB-1A	WG	N	05/31/19	9:58	G	6	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL							
FR-DCL-2019-05-31-NP	FR-DCL	WG	N	05/31/19	9:43	G	6	1	1	1	1	1	1							
FR-FLB-2019-05-31-NP	FR-FLB	WG	N	05/31/19	9:48	G	6	1	1	1	1	1	1							
FR-BCNW-1B-2019-05-31-NP	FR-BCNW-1B	WG	N	05/31/19	11:35	G	6	1	1	1	1	1	1							
FR-TB-1A-2019-05-31-NP	FR-TB-1A	WG	N	05/31/19	13:50	G	6	1	1	1	1	1	1							
FR-TRP-2019-05-31-NP	FR-TRP	WG	N	05/31/19	9:53	G	6	1	1	1	1	1	1							

All samples are field filtered and preserved as required.

JK 6/1 0930

SERVICE REQUIREMENTS		SAMPLER INFORMATION		CONTACT INFORMATION	
Regular (default)	X	Sampler's Name	Tyler Fortin	Mobile #	250-404-5914
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	05/31/19 15:10
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

8°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 01-JUN-19  
Report Date: 11-JUN-19 18:01 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2283637  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20190530-1424  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2283637-1 WG 30-MAY-19 12:08 FR_09-01- A_QTR_2019-04- 01_N	L2283637-2 WG 30-MAY-19 11:07 FR_09-01- B_QTR_2019-04- 01_N	L2283637-3 WG 30-MAY-19 12:38 FR_09-02- A_QTR_2019-04- 01_N	L2283637-4 WG 30-MAY-19 13:14 FR_09-02- B_QTR_2019-04- 01_N	L2283637-5 WG 30-MAY-19 10:00 FR_MW- 1B_QTR_2019-04- 01_N	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1300	959	821	1150	520
	Hardness (as CaCO3) (mg/L)	813	640	433	620	254
	pH (pH)	8.29	8.09	8.18	8.13	8.37
	ORP (mV)	252	330	258	226	252
	Total Suspended Solids (mg/L)	<1.0	4.3	1.8	1.6	2.4
	Total Dissolved Solids (mg/L)	956 <sup>DLHC</sup>	688 <sup>DLHC</sup>	556 <sup>DLHC</sup>	840 <sup>DLHC</sup>	314 <sup>DLHC</sup>
	Turbidity (NTU)	<0.10	2.12	1.18	0.60	1.96
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.0	3.2	<1.0	2.8	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	250	195	173	205	142
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	5.4
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	250	195	173	205	148
	Ammonia as N (mg/L)	<0.0050 <sup>DLDS</sup>	<0.0050	<0.0050	<0.0050 <sup>DLDS</sup>	<0.0050
	Bromide (Br) (mg/L)	<0.25 <sup>DLDS</sup>	<0.050	<0.050	<0.25 <sup>DLDS</sup>	<0.050
	Chloride (Cl) (mg/L)	<2.5 <sup>DLDS</sup>	0.87	0.85	<2.5 <sup>DLDS</sup>	<0.50
	Fluoride (F) (mg/L)	0.22 <sup>DLDS</sup>	0.234	0.215	0.20 <sup>DLDS</sup>	0.193
	Ion Balance (%)	112	127	102	96.5	95.5
	Nitrate (as N) (mg/L)	36.5 <sup>DLDS</sup>	20.5	13.3	31.9 <sup>DLDS</sup>	6.01
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0029 <sup>DLDS</sup>	0.0062	0.0050	0.0033 <sup>DLDS</sup>	0.0062
	Sulfate (SO4) (mg/L)	343	230	200	319	95.9
	Anion Sum (meq/L)	14.8	10.2	8.61	13.0	5.38
	Cation Sum (meq/L)	16.5	12.9	8.80	12.6	5.14
	Cation - Anion Balance (%)	5.5	12.0	1.1	-1.8	-2.3
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.62 <sup>RRV</sup>	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	0.0116
	Antimony (Sb)-Dissolved (mg/L)	0.00022	0.00021	0.00013	0.00011	0.00018
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0870	0.135	0.130	0.102	0.0809
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

11-JUN-19 18:01 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2283637-1	L2283637-2	L2283637-3	L2283637-4	L2283637-5
					WG	WG	WG	WG	WG
		30-MAY-19	12:08	FR_09-01- A_QTR_2019-04- 01_N	30-MAY-19	11:07	30-MAY-19	12:38	30-MAY-19
					FR_09-01- A_QTR_2019-04- 01_N	FR_09-01- B_QTR_2019-04- 01_N	FR_09-02- A_QTR_2019-04- 01_N	FR_09-02- B_QTR_2019-04- 01_N	FR_MW- 1B_QTR_2019-04- 01_N
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.012	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	0.0310	0.0280	0.0134	0.0200	0.0105			
	Calcium (Ca)-Dissolved (mg/L)	182	147	97.6	142	62.9			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	0.00014			
	Cobalt (Co)-Dissolved (ug/L)	0.16	<0.10	<0.10	0.14	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00074	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000087	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0607	0.0458	0.0380	0.0406	0.0205			
	Magnesium (Mg)-Dissolved (mg/L)	87.0	66.1	46.0	64.6	23.6			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00014	<0.00010	0.00073			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00103	0.00191	0.00128	0.000781	0.00109			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.94	2.04	1.69	2.48	0.966			
	Selenium (Se)-Dissolved (ug/L)	130	76.0	52.9	111	19.8			
	Silicon (Si)-Dissolved (mg/L)	1.78	1.75	1.69	1.65	1.74			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.29	2.51	2.38	2.70	0.997			
	Strontium (Sr)-Dissolved (mg/L)	0.239	0.209	0.158	0.177	0.107			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00590	0.00409	0.00298	0.00379	0.00127			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0031	<0.0010	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2283637-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2283637-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2283637-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2283637-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2283637-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2283637-3, -4, -5
Matrix Spike	Nitrate (as N)	MS-B	L2283637-1, -2, -3, -4, -5
Matrix Spike	Phosphorus (P)-Total	MS-B	L2283637-1, -2, -3, -4, -5
Matrix Spike	Orthophosphate-Dissolved (as P)	MS-B	L2283637-1, -2, -3, -4, -5

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The			

## Reference Information

carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water                      Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water                      Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water                      Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190530-1424

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





# Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661868</b>							
<b>WG3071606-12</b>	<b>DUP</b>	<b>L2283637-5</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3071606-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	07-JUN-19
<b>WG3071606-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662795</b>							
<b>WG3072356-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.7		%		85-115	08-JUN-19
<b>WG3072356-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JUN-19
<b>WG3072356-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.9		%		80-120	05-JUN-19
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-19
<b>Batch</b>	<b>R4659286</b>							
<b>WG3067318-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.5		%		80-120	05-JUN-19
<b>WG3067318-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659080</b>							
<b>WG3068267-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-JUN-19
<b>WG3068267-2</b>	<b>LCS</b>							
Bromide (Br)			102.1		%		85-115	02-JUN-19
<b>WG3068267-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	02-JUN-19
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Bromide (Br)			96.7		%		75-125	02-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4659087							
<b>WG3068310-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.2		%		80-120	04-JUN-19
<b>WG3068310-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4659087							
<b>WG3068310-2</b>	<b>LCS</b>							
Total Organic Carbon			98.0		%		80-120	04-JUN-19
<b>WG3068310-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4659080							
<b>WG3068267-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Chloride (Cl)			<0.50		mg/L	RPD-NA	20	02-JUN-19
<b>WG3068267-2</b>	<b>LCS</b>							
Chloride (Cl)			101.0		%		90-110	02-JUN-19
<b>WG3068267-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	02-JUN-19
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Chloride (Cl)			96.2		%		75-125	02-JUN-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4662795							
<b>WG3072356-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.3		%		90-110	08-JUN-19
<b>WG3072356-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-JUN-19
<b>WG3072356-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-JUN-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4659080							
<b>WG3068267-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Fluoride (F)			0.193	0.192	mg/L	0.4	20	02-JUN-19
<b>WG3068267-2</b>	<b>LCS</b>							
Fluoride (F)			104.7		%		90-110	02-JUN-19
<b>WG3068267-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	02-JUN-19
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4659080</b>							
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Fluoride (F)			96.7		%		75-125	02-JUN-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4659877</b>							
<b>WG3067414-27</b>	<b>DUP</b>	<b>L2283637-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-JUN-19
<b>WG3067414-26</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.6		%		80-120	06-JUN-19
<b>WG3067414-25</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.7		%		80-120	05-JUN-19
Antimony (Sb)-Dissolved			96.0		%		80-120	05-JUN-19
Arsenic (As)-Dissolved			99.1		%		80-120	05-JUN-19
Barium (Ba)-Dissolved			105.7		%		80-120	05-JUN-19
Bismuth (Bi)-Dissolved			117.7		%		80-120	05-JUN-19
Boron (B)-Dissolved			91.5		%		80-120	05-JUN-19
Cadmium (Cd)-Dissolved			97.6		%		80-120	05-JUN-19
Calcium (Ca)-Dissolved			95.9		%		80-120	05-JUN-19
Chromium (Cr)-Dissolved			102.5		%		80-120	05-JUN-19
Cobalt (Co)-Dissolved			99.98		%		80-120	05-JUN-19
Copper (Cu)-Dissolved			96.8		%		80-120	05-JUN-19
Iron (Fe)-Dissolved			89.1		%		80-120	05-JUN-19
Lead (Pb)-Dissolved			101.1		%		80-120	05-JUN-19
Lithium (Li)-Dissolved			93.7		%		80-120	05-JUN-19
Magnesium (Mg)-Dissolved			104.4		%		80-120	05-JUN-19
Manganese (Mn)-Dissolved			97.7		%		80-120	05-JUN-19
Molybdenum (Mo)-Dissolved			103.5		%		80-120	05-JUN-19
Nickel (Ni)-Dissolved			97.8		%		80-120	05-JUN-19
Potassium (K)-Dissolved			101.0		%		80-120	05-JUN-19
Selenium (Se)-Dissolved			97.3		%		80-120	05-JUN-19
Silicon (Si)-Dissolved			100.3		%		60-140	05-JUN-19
Silver (Ag)-Dissolved			98.4		%		80-120	05-JUN-19



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			117.4		%		80-120	05-JUN-19
Strontium (Sr)-Dissolved			97.9		%		80-120	05-JUN-19
Thallium (Tl)-Dissolved			100.5		%		80-120	05-JUN-19
Tin (Sn)-Dissolved			99.3		%		80-120	05-JUN-19
Titanium (Ti)-Dissolved			95.4		%		80-120	05-JUN-19
Uranium (U)-Dissolved			100.0		%		80-120	05-JUN-19
Vanadium (V)-Dissolved			101.5		%		80-120	05-JUN-19
Zinc (Zn)-Dissolved			97.9		%		80-120	05-JUN-19
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659067</b>							
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
<b>Batch</b>	<b>R4659128</b>							
<b>WG3067248-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
<b>Batch</b>	<b>R4659286</b>							
<b>WG3067318-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.8		%		80-120	05-JUN-19
Antimony (Sb)-Dissolved			100.5		%		80-120	05-JUN-19
Arsenic (As)-Dissolved			99.96		%		80-120	05-JUN-19
Barium (Ba)-Dissolved			107.7		%		80-120	05-JUN-19
Bismuth (Bi)-Dissolved			99.0		%		80-120	05-JUN-19
Boron (B)-Dissolved			95.4		%		80-120	05-JUN-19
Cadmium (Cd)-Dissolved			101.4		%		80-120	05-JUN-19
Calcium (Ca)-Dissolved			99.7		%		80-120	05-JUN-19
Chromium (Cr)-Dissolved			97.5		%		80-120	05-JUN-19
Cobalt (Co)-Dissolved			99.5		%		80-120	05-JUN-19
Copper (Cu)-Dissolved			99.2		%		80-120	05-JUN-19
Iron (Fe)-Dissolved			96.5		%		80-120	05-JUN-19
Lead (Pb)-Dissolved			102.1		%		80-120	05-JUN-19
Lithium (Li)-Dissolved			100.0		%		80-120	05-JUN-19
Magnesium (Mg)-Dissolved			101.1		%		80-120	05-JUN-19
Manganese (Mn)-Dissolved			99.0		%		80-120	05-JUN-19
Molybdenum (Mo)-Dissolved			102.8		%		80-120	05-JUN-19
Nickel (Ni)-Dissolved			100.5		%		80-120	05-JUN-19
Potassium (K)-Dissolved			102.0		%		80-120	05-JUN-19
Selenium (Se)-Dissolved			99.5		%		80-120	05-JUN-19
Silicon (Si)-Dissolved			103.4		%		60-140	05-JUN-19
Silver (Ag)-Dissolved			101.4		%		80-120	05-JUN-19
Sodium (Na)-Dissolved			105.0		%		80-120	05-JUN-19
Strontium (Sr)-Dissolved			103.1		%		80-120	05-JUN-19
Thallium (Tl)-Dissolved			100.7		%		80-120	05-JUN-19



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659286</b>							
<b>WG3067318-2</b>	<b>LCS</b>							
Tin (Sn)-Dissolved			99.6		%		80-120	05-JUN-19
Titanium (Ti)-Dissolved			97.4		%		80-120	05-JUN-19
Uranium (U)-Dissolved			101.3		%		80-120	05-JUN-19
Vanadium (V)-Dissolved			100.5		%		80-120	05-JUN-19
Zinc (Zn)-Dissolved			99.2		%		80-120	05-JUN-19
<b>WG3067318-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659286</b>							
<b>WG3067318-1</b>	<b>MB</b>	<b>NP</b>						
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662746</b>							
<b>WG3072627-11</b>	<b>DUP</b>	<b>L2283637-5</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3072627-10</b>	<b>LCS</b>							
Ammonia as N			107.1		%		85-115	07-JUN-19
<b>WG3072627-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-JUN-19
<b>WG3072627-12</b>	<b>MS</b>	<b>L2283637-5</b>						
Ammonia as N			114.8		%		75-125	07-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659080</b>							
<b>WG3068267-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-JUN-19
<b>WG3068267-2</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	02-JUN-19
<b>WG3068267-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	02-JUN-19
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Nitrite (as N)			99.3		%		75-125	02-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659080</b>							
<b>WG3068267-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Nitrate (as N)		6.01	6.00		mg/L	0.2	20	02-JUN-19
<b>WG3068267-2</b>	<b>LCS</b>							
Nitrate (as N)			94.0		%		90-110	02-JUN-19
<b>WG3068267-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	02-JUN-19
<b>WG3068267-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Nitrate (as N)			N/A	MS-B	%		-	02-JUN-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>								
Batch	R4662150							
WG3071405-3	CRM	CL-ORP						
ORP			220		mV		210-230	07-JUN-19
WG3071405-4	DUP	L2283637-1						
ORP		252	259	J	mV	7.2	15	07-JUN-19
<b>P-T-L-COL-CL</b>								
Batch	R4661625							
WG3071299-14	LCS							
Phosphorus (P)-Total			103.5		%		80-120	07-JUN-19
WG3071299-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-JUN-19
<b>PH-CL</b>								
Batch	R4662795							
WG3072356-8	LCS							
pH			7.01		pH		6.9-7.1	08-JUN-19
<b>PO4-DO-L-COL-CL</b>								
Batch	R4653712							
WG3065128-18	LCS							
Orthophosphate-Dissolved (as P)			96.6		%		80-120	02-JUN-19
WG3065128-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-JUN-19
<b>SO4-IC-N-CL</b>								
Batch	R4659080							
WG3068267-3	DUP	L2283637-5						
Sulfate (SO4)		95.9	95.9		mg/L	0.1	20	02-JUN-19
WG3068267-2	LCS							
Sulfate (SO4)			101.4		%		90-110	02-JUN-19
WG3068267-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	02-JUN-19
WG3068267-4	MS	L2283637-5						
Sulfate (SO4)			93.5		%		75-125	02-JUN-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4661502							
WG3068137-11	LCS							
Total Dissolved Solids			94.4		%		85-115	05-JUN-19
WG3068137-10	MB							
Total Dissolved Solids			<10		mg/L		10	05-JUN-19





## Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661191</b>							
<b>WG3070884-3</b>	<b>DUP</b>	<b>L2283637-5</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3070884-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.8		%		75-125	07-JUN-19
<b>WG3070884-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	07-JUN-19
<b>WG3070884-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.2		%		75-125	07-JUN-19
<b>WG3070884-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-4</b>	<b>MS</b>	<b>L2283637-5</b>						
Total Kjeldahl Nitrogen			89.9		%		70-130	07-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4660306</b>							
<b>WG3068648-20</b>	<b>LCS</b>							
Total Suspended Solids			96.9		%		85-115	05-JUN-19
<b>WG3068648-19</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4653557</b>							
<b>WG3065088-3</b>	<b>DUP</b>	<b>L2283637-1</b>						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	02-JUN-19
<b>WG3065088-2</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	02-JUN-19
<b>WG3065088-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	02-JUN-19

# Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2283637

Report Date: 11-JUN-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	30-MAY-19 12:08	07-JUN-19 14:00	0.25	194	hours	EHTR-FM
	2	30-MAY-19 11:07	07-JUN-19 14:00	0.25	195	hours	EHTR-FM
	3	30-MAY-19 12:38	07-JUN-19 14:00	0.25	193	hours	EHTR-FM
	4	30-MAY-19 13:14	07-JUN-19 14:00	0.25	193	hours	EHTR-FM
	5	30-MAY-19 10:00	07-JUN-19 14:00	0.25	196	hours	EHTR-FM
pH							
	1	30-MAY-19 12:08	08-JUN-19 11:00	0.25	215	hours	EHTR-FM
	2	30-MAY-19 11:07	08-JUN-19 11:00	0.25	216	hours	EHTR-FM
	3	30-MAY-19 12:38	08-JUN-19 11:00	0.25	214	hours	EHTR-FM
	4	30-MAY-19 13:14	08-JUN-19 11:00	0.25	214	hours	EHTR-FM
	5	30-MAY-19 10:00	08-JUN-19 11:00	0.25	217	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2283637 were received on 01-JUN-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20190530-1424**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dyan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH	Y	Y	Y	Y	Y				
								RESERV.	H2SO4	HCL	HNO3	NONE	H2SO4				
								ANALYSIS	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC				
FR_09-01-A_QTR_2019-04-01_N	FR_09-01-A	WG		2019/05/30	12:08	G	5		1	1	1	1	1				
FR_09-01-B_QTR_2019-04-01_N	FR_09-01-B	WG		2019/05/30	11:07	G	5		1	1	1	1	1				
FR_09-02-A_QTR_2019-04-01_N	FR_09-02-A	WG		2019/05/30	12:38	G	5		1	1	1	1	1				
FR_09-02-B_QTR_2019-04-01_N	FR_09-02-B	WG		2019/05/30	13:14	G	5		1	1	1	1	1				
FR_MW-1B_QTR_2019-04-01_N	FR_MW-1B	WG		2019/05/30	10:00	G	5		1	1	1	1	1				



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	May 30, 2019	<i>JK</i>	<i>6/1 0930</i>
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Jared Cayenne	Mobile #	2504219457
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	May 30, 2019
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

13°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 05-JUN-19  
Report Date: 24-JUN-19 11:07 (MT)  
Version: FINAL REV. 2

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2286060  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 2019-06-04  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2286060-1	L2286060-2	L2286060-3	L2286060-4	L2286060-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	04-JUN-19	04-JUN-19	04-JUN-19	04-JUN-19	04-JUN-19
		Sampled Time	12:40	11:10	09:00	09:20	08:45
		Client ID	FR_TBSSMW-2_2019-06-04	FR_LP-3A_2019-06-04	FR_LM-2A_2019-06-04	FR_LM-2B_2019-06-04	FR_LM-3A_2019-06-04
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		401	3370	1750	1790	667
	Hardness (as CaCO3) (mg/L)			397	179	89.5	21.6
	Hardness (as CaCO3)		189				
	pH (pH)		8.33	8.38	8.56	8.64	8.45
	ORP (mV)		455	259	331	252	290
	Total Suspended Solids (mg/L)		1.6	66.8	33.4	22.2	51.8
	Total Dissolved Solids (mg/L)		226 <sup>DLHC</sup>	2490 <sup>DLHC</sup>	1130 <sup>DLHC</sup>	1220 <sup>DLHC</sup>	385 <sup>DLHC</sup>
	Turbidity (NTU)		0.60	61.5	41.7	23.1	224
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		128	520	377	477	335
	Alkalinity, Carbonate (as CaCO3) (mg/L)		4.6	13.8	24.0	31.8	23.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		133	534	401	509	359
	Ammonia as N (mg/L)		0.0107	0.0237 <sup>DLHC</sup>	0.919 <sup>DLHC</sup>	0.0281 <sup>DLHC</sup>	0.734 <sup>DLHC</sup>
	Bromide (Br) (mg/L)		<0.050	0.52 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050
	Chloride (Cl) (mg/L)		<0.50	40.3 <sup>DLHC</sup>	34.1 <sup>DLHC</sup>	13.6 <sup>DLHC</sup>	2.07
	Fluoride (F) (mg/L)		0.283	0.96 <sup>DLHC</sup>	0.66 <sup>DLHC</sup>	1.58 <sup>DLHC</sup>	0.724
	Ion Balance (%)		89.0	111	96.6	98.1	103
	Nitrate (as N) (mg/L)		1.66	0.027 <sup>DLHC</sup>	0.034 <sup>DLHC</sup>	<0.025 <sup>DLHC</sup>	0.0171
	Nitrite (as N) (mg/L)		<0.0010	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010 <sup>DLM</sup>
	Total Kjeldahl Nitrogen (mg/L)		0.275	1.28 <sup>DLM</sup>	1.48	0.498	1.13
	Orthophosphate-Dissolved (as P) (mg/L)		0.0013	0.0027 <sup>DLHC</sup>	0.0129	0.0510 <sup>DLHC</sup>	<0.0010 <sup>DLHC</sup>
	Phosphorus (P)-Total (mg/L)		0.0025	0.181 <sup>DLHC</sup>	0.0723 <sup>DLHC</sup>	0.131	0.224
	Sulfate (SO4) (mg/L)		72.4	1220 <sup>DLHC</sup>	440 <sup>DLHC</sup>	434	6.28
	Anion Sum (meq/L)		4.29	37.3	18.2	19.7	7.39
	Cation Sum (meq/L)		3.82	41.5	17.5	19.3	7.60
	Cation - Anion Balance (%)		-5.8	5.4	-1.7	-0.9	1.3
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.70	95.2	14.0	26.3
Total Organic Carbon (mg/L)			0.98	95.7	15.6	26.6	3.28
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0012	0.0075	0.0028	0.0074	0.0072
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00025	0.00020	0.00020	0.00039
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00806	0.00208	0.0106	0.00103
	Barium (Ba)-Dissolved (mg/L)		0.0492	0.0365	0.0742	0.0227	0.171

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2286060-6 WG 04-JUN-19 10:15 FR_LM-3B_2019-06-04			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1290			
	Hardness (as CaCO3) (mg/L)	395			
	Hardness (as CaCO3)				
	pH (pH)	8.20			
	ORP (mV)	270			
	Total Suspended Solids (mg/L)	14.9			
	Total Dissolved Solids (mg/L)	853	DLHC		
	Turbidity (NTU)	12.8			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	366			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	366			
	Ammonia as N (mg/L)	0.0417			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	27.9	DLHC		
	Fluoride (F) (mg/L)	0.43	DLHC		
	Ion Balance (%)	106			
	Nitrate (as N) (mg/L)	<0.025	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	0.296			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0241			
	Sulfate (SO4) (mg/L)	314	DLHC		
	Anion Sum (meq/L)	14.7			
	Cation Sum (meq/L)	15.6			
	Cation - Anion Balance (%)	3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	21.7			
	Total Organic Carbon (mg/L)	23.3			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0377			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00381			
	Barium (Ba)-Dissolved (mg/L)	0.145			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2286060-1 WG 04-JUN-19 12:40 FR_TBSSMW- 2_2019-06-04	L2286060-2 WG 04-JUN-19 11:10 FR_LP-3A_2019- 06-04	L2286060-3 WG 04-JUN-19 09:00 FR_LM-2A_2019- 06-04	L2286060-4 WG 04-JUN-19 09:20 FR_LM-2B_2019- 06-04	L2286060-5 WG 04-JUN-19 08:45 FR_LM-3A_2019- 06-04
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	0.107	0.433	0.079	0.659
Cadmium (Cd)-Dissolved (ug/L)	0.0086	<0.0050	0.0059	0.0064	<0.0050
Calcium (Ca)-Dissolved (mg/L)	46.6	104	48.1	25.5	5.33
Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00028	<0.00010	0.00011	<0.00010
Cobalt (Co)-Dissolved (ug/L)	<0.10	0.17	<0.10	0.28	<0.10
Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00032	<0.00020	<0.00020
Iron (Fe)-Dissolved (mg/L)	<0.010	0.250	<0.010	0.246	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0075	0.0319	0.257	0.0199	0.178
Magnesium (Mg)-Dissolved (mg/L)	17.6	33.0	14.2	6.30	2.00
Manganese (Mn)-Dissolved (mg/L)	<0.00010	1.30	0.00018	0.311	0.0177
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.000890	0.00947	0.00400	0.0143	0.00258
Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00147	0.00127	0.00121	0.00051
Potassium (K)-Dissolved (mg/L)	0.632	6.27	3.93	2.72	1.84
Selenium (Se)-Dissolved (ug/L)	12.7	1.31	0.235	0.252	0.121
Silicon (Si)-Dissolved (mg/L)	1.44	8.88	4.80	7.40	3.54
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	0.569	766	317	401	162
Strontium (Sr)-Dissolved (mg/L)	0.0862	0.436	1.14	0.126	0.401
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00026	0.00016	0.00078	0.00025
Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Dissolved (mg/L)	0.000725	0.00898	0.00393	0.0109	0.00164
Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00116	<0.00050	0.00073	0.00115
Zinc (Zn)-Dissolved (mg/L)	0.0034	<0.0010	<0.0010	0.0038	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2286060-6			
		WG			
		04-JUN-19			
		10:15			
		FR_LM-3B_2019-06-04			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.039			
	Cadmium (Cd)-Dissolved (ug/L)	0.0254			
	Calcium (Ca)-Dissolved (mg/L)	105			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.91			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.592			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0147			
	Magnesium (Mg)-Dissolved (mg/L)	32.4			
	Manganese (Mn)-Dissolved (mg/L)	1.09			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00333			
	Nickel (Ni)-Dissolved (mg/L)	0.00196			
	Potassium (K)-Dissolved (mg/L)	4.63			
	Selenium (Se)-Dissolved (ug/L)	0.782			
	Silicon (Si)-Dissolved (mg/L)	7.36			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	172			
	Strontium (Sr)-Dissolved (mg/L)	0.374			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00452			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			

## Reference Information

<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

**Chain of Custody Numbers:**

---

2019-06-04

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663639</b>							
<b>WG3073547-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	10-JUN-19
<b>WG3073547-13</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	10-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4665178</b>							
<b>WG3075146-9</b>	<b>DUP</b>	<b>L2286060-5</b>						
Alkalinity, Total (as CaCO3)		359	377		mg/L	4.9	20	11-JUN-19
<b>WG3075146-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.9		%		85-115	11-JUN-19
<b>WG3075146-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-JUN-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4664669</b>							
<b>WG3075332-10</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			93.0		%		80-120	12-JUN-19
<b>WG3075332-14</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.4		%		80-120	12-JUN-19
<b>WG3075332-13</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-19
<b>WG3075332-9</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663999</b>							
<b>WG3074337-14</b>	<b>LCS</b>							
Bromide (Br)			107.7		%		85-115	06-JUN-19
<b>WG3074337-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662342</b>							
<b>WG3072296-18</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.6		%		80-120	08-JUN-19
<b>WG3072296-17</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-19



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4662382							
<b>WG3072304-10 LCS</b>								
Dissolved Organic Carbon			110.5		%		80-120	08-JUN-19
<b>WG3072304-9 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4662342							
<b>WG3072296-18 LCS</b>								
Total Organic Carbon			102.4		%		80-120	08-JUN-19
<b>WG3072296-17 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
Batch	R4662382							
<b>WG3072304-10 LCS</b>								
Total Organic Carbon			96.1		%		80-120	08-JUN-19
<b>WG3072304-9 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4663999							
<b>WG3074337-14 LCS</b>								
Chloride (Cl)			102.5		%		90-110	06-JUN-19
<b>WG3074337-13 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	06-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4665178							
<b>WG3075146-9 DUP</b>		<b>L2286060-5</b>						
Conductivity (@ 25C)		667	654		uS/cm	2.0	10	11-JUN-19
<b>WG3075146-8 LCS</b>								
Conductivity (@ 25C)			102.9		%		90-110	11-JUN-19
<b>WG3075146-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4663999							
<b>WG3074337-14 LCS</b>								
Fluoride (F)			104.8		%		90-110	06-JUN-19
<b>WG3074337-13 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	06-JUN-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663843</b>							
<b>WG3074067-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.3		%		80-120	11-JUN-19
<b>WG3074067-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.5		%		80-120	11-JUN-19
<b>WG3074067-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-19
<b>WG3074067-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-19
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663843</b>							
<b>WG3074068-10</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.6		%		80-120	11-JUN-19
<b>WG3074068-9</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	11-JUN-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4664669</b>							
<b>WG3075332-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.1		%		80-120	12-JUN-19
Antimony (Sb)-Dissolved			99.8		%		80-120	12-JUN-19
Arsenic (As)-Dissolved			99.2		%		80-120	12-JUN-19
Barium (Ba)-Dissolved			99.9		%		80-120	12-JUN-19
Bismuth (Bi)-Dissolved			103.0		%		80-120	12-JUN-19
Boron (B)-Dissolved			101.8		%		80-120	12-JUN-19
Cadmium (Cd)-Dissolved			95.8		%		80-120	12-JUN-19
Calcium (Ca)-Dissolved			96.3		%		80-120	12-JUN-19
Chromium (Cr)-Dissolved			93.3		%		80-120	12-JUN-19
Cobalt (Co)-Dissolved			89.7		%		80-120	12-JUN-19
Copper (Cu)-Dissolved			89.6		%		80-120	12-JUN-19
Iron (Fe)-Dissolved			102.3		%		80-120	12-JUN-19
Lead (Pb)-Dissolved			106.1		%		80-120	12-JUN-19
Lithium (Li)-Dissolved			97.0		%		80-120	12-JUN-19
Magnesium (Mg)-Dissolved			97.3		%		80-120	12-JUN-19
Manganese (Mn)-Dissolved			101.9		%		80-120	12-JUN-19
Molybdenum (Mo)-Dissolved			93.8		%		80-120	12-JUN-19
Nickel (Ni)-Dissolved			99.5		%		80-120	12-JUN-19
Potassium (K)-Dissolved			98.0		%		80-120	12-JUN-19



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4664669</b>							
<b>WG3075332-10 LCS</b>		<b>TMRM</b>						
Selenium (Se)-Dissolved			98.4		%		80-120	12-JUN-19
Silicon (Si)-Dissolved			102.7		%		60-140	12-JUN-19
Silver (Ag)-Dissolved			93.4		%		80-120	12-JUN-19
Sodium (Na)-Dissolved			97.6		%		80-120	12-JUN-19
Strontium (Sr)-Dissolved			98.7		%		80-120	12-JUN-19
Thallium (Tl)-Dissolved			106.5		%		80-120	12-JUN-19
Tin (Sn)-Dissolved			97.0		%		80-120	12-JUN-19
Titanium (Ti)-Dissolved			97.9		%		80-120	12-JUN-19
Uranium (U)-Dissolved			97.2		%		80-120	12-JUN-19
Vanadium (V)-Dissolved			101.3		%		80-120	12-JUN-19
Zinc (Zn)-Dissolved			101.3		%		80-120	12-JUN-19
<b>WG3075332-14 LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.2		%		80-120	12-JUN-19
Antimony (Sb)-Dissolved			106.6		%		80-120	12-JUN-19
Arsenic (As)-Dissolved			98.7		%		80-120	12-JUN-19
Barium (Ba)-Dissolved			97.6		%		80-120	12-JUN-19
Bismuth (Bi)-Dissolved			98.0		%		80-120	12-JUN-19
Boron (B)-Dissolved			105.2		%		80-120	12-JUN-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	12-JUN-19
Calcium (Ca)-Dissolved			104.8		%		80-120	12-JUN-19
Chromium (Cr)-Dissolved			91.0		%		80-120	12-JUN-19
Cobalt (Co)-Dissolved			88.6		%		80-120	12-JUN-19
Copper (Cu)-Dissolved			88.7		%		80-120	12-JUN-19
Iron (Fe)-Dissolved			100.7		%		80-120	12-JUN-19
Lead (Pb)-Dissolved			100.7		%		80-120	12-JUN-19
Lithium (Li)-Dissolved			100.1		%		80-120	12-JUN-19
Magnesium (Mg)-Dissolved			101.0		%		80-120	12-JUN-19
Manganese (Mn)-Dissolved			100.1		%		80-120	12-JUN-19
Molybdenum (Mo)-Dissolved			101.0		%		80-120	12-JUN-19
Nickel (Ni)-Dissolved			98.2		%		80-120	12-JUN-19
Potassium (K)-Dissolved			98.2		%		80-120	12-JUN-19
Selenium (Se)-Dissolved			98.4		%		80-120	12-JUN-19
Silicon (Si)-Dissolved			103.3		%		60-140	12-JUN-19
Silver (Ag)-Dissolved			97.0		%		80-120	12-JUN-19





## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4664669</b>							
<b>WG3075332-14 LCS</b>		<b>TMRM</b>						
Sodium (Na)-Dissolved			98.3		%		80-120	12-JUN-19
Strontium (Sr)-Dissolved			103.2		%		80-120	12-JUN-19
Thallium (Tl)-Dissolved			98.2		%		80-120	12-JUN-19
Tin (Sn)-Dissolved			102.6		%		80-120	12-JUN-19
Titanium (Ti)-Dissolved			99.7		%		80-120	12-JUN-19
Uranium (U)-Dissolved			90.4		%		80-120	12-JUN-19
Vanadium (V)-Dissolved			99.9		%		80-120	12-JUN-19
Zinc (Zn)-Dissolved			103.2		%		80-120	12-JUN-19
<b>WG3075332-13 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4664669</b>							
<b>WG3075332-13 MB</b>								
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
<b>WG3075332-9 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19



## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
Batch R4664669								
<b>WG3075332-9 MB</b>								
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4663733								
<b>WG3073894-7 DUP</b>								
Ammonia as N		<b>L2286060-6</b> 0.0417	0.0361		mg/L	14	20	10-JUN-19
<b>WG3073894-18 LCS</b>								
Ammonia as N			109.6		%		85-115	10-JUN-19
<b>WG3073894-6 LCS</b>								
Ammonia as N			105.5		%		85-115	10-JUN-19
<b>WG3073894-17 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	10-JUN-19
<b>WG3073894-5 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	10-JUN-19
<b>WG3073894-8 MS</b>								
Ammonia as N		<b>L2286060-6</b>	99.7		%		75-125	10-JUN-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4663999								
<b>WG3074337-14 LCS</b>								
Nitrite (as N)			102.8		%		90-110	06-JUN-19
<b>WG3074337-13 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	06-JUN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4663999								
<b>WG3074337-14 LCS</b>								
Nitrate (as N)			102.8		%		90-110	06-JUN-19
<b>WG3074337-13 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	06-JUN-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4664182								
<b>WG3074651-5 CRM</b>								
ORP		<b>CL-ORP</b>	227		mV		210-230	11-JUN-19
<b>WG3074651-7 CRM</b>								
ORP		<b>CL-ORP</b>	222		mV		210-230	11-JUN-19
<b>WG3074651-8 DUP</b>								
ORP		<b>L2286060-6</b> 270	264	J	mV	5.6	15	11-JUN-19





## Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4664396</b>							
<b>WG3074790-7</b>	<b>DUP</b>	<b>L2286060-6</b>						
Total Kjeldahl Nitrogen		0.296	0.318		mg/L	7.2	20	11-JUN-19
<b>WG3074790-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.0		%		75-125	11-JUN-19
<b>WG3074790-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.9		%		75-125	11-JUN-19
<b>WG3074790-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.4		%		75-125	11-JUN-19
<b>WG3074790-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-JUN-19
<b>WG3074790-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-JUN-19
<b>WG3074790-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-JUN-19
<b>WG3074790-8</b>	<b>MS</b>	<b>L2286060-6</b>						
Total Kjeldahl Nitrogen			108.0		%		70-130	11-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4662474</b>							
<b>WG3071859-4</b>	<b>LCS</b>							
Total Suspended Solids			89.4		%		85-115	08-JUN-19
<b>WG3071859-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	08-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4660813</b>							
<b>WG3070154-11</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	06-JUN-19
<b>WG3070154-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	06-JUN-19
<b>Batch</b>	<b>R4661885</b>							
<b>WG3071389-15</b>	<b>DUP</b>	<b>L2286060-1</b>						
Turbidity		0.60	0.60		NTU	0.8	15	07-JUN-19
<b>WG3071389-14</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	07-JUN-19
<b>WG3071389-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-JUN-19

# Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2286060

Report Date: 24-JUN-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	04-JUN-19 12:40	11-JUN-19 08:50	0.25	164	hours	EHTR-FM
	2	04-JUN-19 11:10	11-JUN-19 08:50	0.25	166	hours	EHTR-FM
	3	04-JUN-19 09:00	11-JUN-19 08:50	0.25	168	hours	EHTR-FM
	4	04-JUN-19 09:20	11-JUN-19 08:50	0.25	168	hours	EHTR-FM
	5	04-JUN-19 08:45	11-JUN-19 08:50	0.25	168	hours	EHTR-FM
	6	04-JUN-19 10:15	11-JUN-19 08:50	0.25	167	hours	EHTR-FM
pH							
	1	04-JUN-19 12:40	11-JUN-19 17:00	0.25	172	hours	EHTR-FM
	2	04-JUN-19 11:10	11-JUN-19 17:00	0.25	174	hours	EHTR-FM
	3	04-JUN-19 09:00	11-JUN-19 17:00	0.25	176	hours	EHTR-FM
	4	04-JUN-19 09:20	11-JUN-19 17:00	0.25	176	hours	EHTR-FM
	5	04-JUN-19 08:45	12-JUN-19 17:00	0.25	200	hours	EHTR-FM
	6	04-JUN-19 10:15	11-JUN-19 17:00	0.25	175	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2286060 were received on 05-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



2060

COC ID: 2019-06-04

TURN-AROUND TIME: Regular

RUSH:

Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	Leilah.Tate@teck.com		
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@edisonline.com		
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com		
								Email 4:	nell.mcdonald@teck.com		
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:			
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00617299		



L2286060-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab, C=Com p	# Of Cont.	ANALYSIS (µg/g)						
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECK COAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	
FR-TBSSMW-2-2019-06-04	TBSSMW-2	WG	Z	2019/06/04	12:40	G	6	1	1	1	1	1		
FR-LP-3A-2019-06-04	LP-3A	WG	Z		11:10	G	6	1	1	1	1	1		
FR-LM-2A-2019-06-04	LM-2A	WG	Z		09:00	G	6	1	1	1	1	1		
FR-LM-2B-2019-06-04	LM-2B	WG	Z		09:20	G	6	1	1	1	1	1		
FR-LM-3A-2019-06-04	LM-3A	WG	Z		08:45	G	6	1	1	1	1	1		
FR-LM-3B-2019-06-04	LM-3B	WG	Y		10:15	G	6	1	1	1	1	1		

All samples are field filtered and preserved as required.

Dk 6/5/090

Regular (default) X	Sampler's Name	Tyler Fortin	Mobile #	250 464 5914
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>Tyler Fortin</i>	Date/Time	2019-06-04
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

10°C





TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 07-JUN-19  
Report Date: 26-JUN-19 12:43 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2287341  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190606  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2287341-1	L2287341-2	L2287341-3	L2287341-4	L2287341-5
					WG 06-JUN-19 10:35 FR_TB_2B_2019-06-05_NP	WG 06-JUN-19 10:40 FR_DC-3_2019-06-06_NP	WG 06-JUN-19 10:45 FR_FLD_2019-06-06_NP	WG 06-JUN-19 10:50 FR_TRP_2019-06-06_NP	WG 06-JUN-19 09:05 FR_LM-1B_2019-06-06_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	512	513	<2.0	<2.0	2000			
	Hardness (as CaCO3) (mg/L)	246	253	<0.50	<0.50	326			
	pH (pH)	8.25	8.21	5.93	5.40	8.39			
	ORP (mV)	456	431	425	529	302			
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	25.1			
	Total Dissolved Solids (mg/L)	355 <sup>DLHC</sup>	349 <sup>DLHC</sup>	<10	<10	1360 <sup>DLHC</sup>			
	Turbidity (NTU)	0.18	0.29	<0.10	<0.10	23.2			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.2	3.0	1.3	1.7	9.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	153	158	<1.0	<1.0	485			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	17.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	153	158	<1.0	<1.0	502			
	Ammonia as N (mg/L)	<0.0050	0.0085	<0.0050	<0.0050 <sup>RRV</sup>	0.308 <sup>DLHC</sup>			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	26.9 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.136	0.133	<0.020	<0.020	0.92 <sup>DLHC</sup>			
	Ion Balance (%)	86.0	87.2	0.0	0.0	97.9 <sup>DLHC</sup>			
	Nitrate (as N) (mg/L)	2.85	2.82	<0.0050 <sup>HTD</sup>	<0.0050 <sup>HTD</sup>	0.244 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010 <sup>TKNI</sup>	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	0.122 <sup>TKNI</sup>	0.083 <sup>TKNI</sup>	<0.050	<0.050	0.661			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0017	<0.0010	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0529 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	121	121	<0.30	<0.30	608			
	Anion Sum (meq/L)	5.78	5.86	<0.10	<0.10	23.5			
	Cation Sum (meq/L)	4.97	5.11	<0.10	<0.10	23.0			
	Cation - Anion Balance (%)	-7.5	-6.9	0.0	0.0	-1.1			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	18.8		
Total Organic Carbon (mg/L)		<0.50	<0.50	<0.50	<0.50	22.2			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0013	<0.0010	<0.0010	0.0026			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00385			
	Barium (Ba)-Dissolved (mg/L)	0.109	0.109	0.00047 <sup>RRV</sup>	<0.00010	0.0627			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2287341-6 WG 06-JUN-19 09:20 FR_LM-1A_2019-06-06_NP	L2287341-7 WG 06-JUN-19 12:30 FR_TB_2A_2019-06-05_NP	L2287341-8 WG 06-JUN-19 15:00 FR_TBSSMW-1_2019_06_06_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	3160	697	362	
	Hardness (as CaCO3) (mg/L)	98.9	433	132	
	pH (pH)	8.65	7.81	8.49	
	ORP (mV)	313	491	328	
	Total Suspended Solids (mg/L)	69.0	991 <sup>DLHC</sup>	15.6 <sup>DLHC</sup>	
	Total Dissolved Solids (mg/L)	2180 <sup>DLHC</sup>	461 <sup>DLHC</sup>	194 <sup>DLHC</sup>	
	Turbidity (NTU)	102	839	6.84	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	33.5	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	449	473	188	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	35.8	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	485	473 <sup>DLHC</sup>	188	
	Ammonia as N (mg/L)	1.09 <sup>DLHC</sup>	3.89 <sup>DLHC</sup>	2.73	
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.050	
	Chloride (Cl) (mg/L)	83.8 <sup>DLHC</sup>	<0.50	0.86	
	Fluoride (F) (mg/L)	1.14 <sup>DLHC</sup>	0.394	0.380	
	Ion Balance (%)	109	102	88.1	
	Nitrate (as N) (mg/L)	0.202 <sup>DLHC</sup>	<0.0050 <sup>HTD</sup>	0.0083	
	Nitrite (as N) (mg/L)	0.0177 <sup>DLHC</sup>	<0.0010 <sup>HTD</sup>	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	2.13	11.1 <sup>DLHC</sup>	2.93	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0483	<0.0010 <sup>DLHC</sup>	0.0013	
	Phosphorus (P)-Total (mg/L)	0.209 <sup>DLHC</sup>	1.10 <sup>DLHC</sup>	0.0162	
	Sulfate (SO4) (mg/L)	1020 <sup>DLHC</sup>	<0.30	25.3	
	Anion Sum (meq/L)	33.4	9.47	4.32	
	Cation Sum (meq/L)	36.5	9.67	3.81	
	Cation - Anion Balance (%)	4.5	1.1	-6.3	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	62.0	2.12	1.20
Total Organic Carbon (mg/L)		62.5 <sup>DLM</sup>	74.1 <sup>DLM</sup>	2.50	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0085	<0.0010	0.0022	
	Antimony (Sb)-Dissolved (mg/L)	0.00033	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00657	0.00066	0.00122	
	Barium (Ba)-Dissolved (mg/L)	0.0518	8.10 <sup>RRV</sup>	1.60 <sup>RRV</sup>	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2287341-1	L2287341-2	L2287341-3	L2287341-4	L2287341-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	06-JUN-19	06-JUN-19	06-JUN-19	06-JUN-19	06-JUN-19
		Sampled Time	10:35	10:40	10:45	10:50	09:05
		Client ID	FR_TB_2B_2019-06-05_NP	FR_DC-3_2019-06-06_NP	FR_FLD_2019-06-06_NP	FR_TRP_2019-06-06_NP	FR_LM-1B_2019-06-06_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	0.181
	Cadmium (Cd)-Dissolved (ug/L)		0.0120	0.0131	<0.0050	<0.0050	0.0089
	Calcium (Ca)-Dissolved (mg/L)		65.6	68.4	<0.050	<0.050	78.4
	Chromium (Cr)-Dissolved (mg/L)		0.00013	0.00017	0.00028 <sup>RRV</sup>	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	<0.10	1.05
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	1.20
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0065	0.0068	<0.0010	<0.0010	0.0940
	Magnesium (Mg)-Dissolved (mg/L)		20.0	20.0	0.0090 <sup>RRV</sup>	<0.0050	31.6
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00013 <sup>RRV</sup>	<0.00010	1.22
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000355	0.000362	<0.000050	<0.000050	0.00338
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.00181
	Potassium (K)-Dissolved (mg/L)		0.513	0.513	<0.050	<0.050	6.90
	Selenium (Se)-Dissolved (ug/L)		21.3	21.9	<0.050	<0.050	0.385
	Silicon (Si)-Dissolved (mg/L)		2.37	2.37	0.127 <sup>RRV</sup>	<0.050	7.12
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.909	0.914	0.187 <sup>RRV</sup>	<0.050	372
	Strontium (Sr)-Dissolved (mg/L)		0.142	0.144	0.00024 <sup>RRV</sup>	<0.00020	1.21
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00019 <sup>RRV</sup>	<0.00010	0.00030
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000533	0.000538	<0.000010	<0.000010	0.00967
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	0.0011

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2287341-6 WG 06-JUN-19 09:20 FR_LM-1A_2019-06-06_NP	L2287341-7 WG 06-JUN-19 12:30 FR_TB_2A_2019-06-05_NP	L2287341-8 WG 06-JUN-19 15:00 FR_TBSSMW-1_2019_06_06_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.611	0.044	0.012	
	Cadmium (Cd)-Dissolved (ug/L)	0.0125	0.0104	0.0051	
	Calcium (Ca)-Dissolved (mg/L)	25.6	112	11.7	
	Chromium (Cr)-Dissolved (mg/L)	0.00016	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.36	0.25	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.074	0.789	0.108	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.658	0.782	0.189	
	Magnesium (Mg)-Dissolved (mg/L)	8.48	37.5	24.9	
	Manganese (Mn)-Dissolved (mg/L)	0.303	0.0720	0.0384	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0141	0.00224	0.0136	
	Nickel (Ni)-Dissolved (mg/L)	0.00327	0.00100	<0.00050	
	Potassium (K)-Dissolved (mg/L)	4.10	14.1	5.85	
	Selenium (Se)-Dissolved (ug/L)	0.946	<0.050	<0.050	
	Silicon (Si)-Dissolved (mg/L)	5.97	3.13	2.56	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	788	7.66	18.9	
	Strontium (Sr)-Dissolved (mg/L)	1.85	0.606	0.222	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000012	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	0.00047	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.0189	0.000081	0.000168	
	Vanadium (V)-Dissolved (mg/L)	0.00094	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0084	0.0017	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2287341-1, -2, -3, -4, -5, -6, -7, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**HG-T-CVAA-CL** Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

20190606

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 1 of 17

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4670146							
<b>WG3077278-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	13-JUN-19
<b>WG3077278-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.6		%		85-115	13-JUN-19
<b>WG3077278-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	13-JUN-19
<b>WG3077278-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	13-JUN-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4670261							
<b>WG3077603-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.4		%		85-115	13-JUN-19
<b>WG3077603-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-JUN-19
Batch	R4671737							
<b>WG3079070-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	15-JUN-19
<b>WG3079070-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUN-19
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
Batch	R4670224							
<b>WG3077282-16</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			98.0		%		80-120	13-JUN-19
<b>WG3077282-17</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.5		%		80-120	13-JUN-19
<b>WG3077282-19</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			101.2		%		80-120	13-JUN-19
<b>WG3077282-19</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			104.6		%		80-120	13-JUN-19
<b>WG3077282-16</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-JUN-19
<b>WG3077282-17</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-JUN-19
<b>WG3077282-19</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-JUN-19
<b>WG3077282-19</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-JUN-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 2 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4666127</b>							
<b>WG3075433-11</b>	<b>DUP</b>	<b>L2287341-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3075433-10</b>	<b>LCS</b>							
Bromide (Br)			107.1		%		85-115	07-JUN-19
<b>WG3075433-14</b>	<b>LCS</b>							
Bromide (Br)			105.1		%		85-115	07-JUN-19
<b>WG3075433-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>WG3075433-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>WG3075433-12</b>	<b>MS</b>	<b>L2287341-4</b>						
Bromide (Br)			116.0		%		75-125	07-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4670030</b>							
<b>WG3077463-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.8		%		80-120	13-JUN-19
<b>WG3077463-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4670030</b>							
<b>WG3077463-2</b>	<b>LCS</b>							
Total Organic Carbon			98.1		%		80-120	13-JUN-19
<b>WG3077463-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-JUN-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4666127</b>							
<b>WG3075433-11</b>	<b>DUP</b>	<b>L2287341-4</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3075433-10</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	07-JUN-19
<b>WG3075433-14</b>	<b>LCS</b>							
Chloride (Cl)			100.5		%		90-110	07-JUN-19
<b>WG3075433-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>WG3075433-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>WG3075433-12</b>	<b>MS</b>	<b>L2287341-4</b>						
Chloride (Cl)			114.4		%		75-125	07-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 3 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4670261</b>							
<b>WG3077603-12</b>	<b>DUP</b>	<b>L2287341-1</b>						
Conductivity (@ 25C)		512	509		uS/cm	0.6	10	13-JUN-19
<b>WG3077603-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.6		%		90-110	13-JUN-19
<b>WG3077603-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4666127</b>							
<b>WG3075433-11</b>	<b>DUP</b>	<b>L2287341-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3075433-10</b>	<b>LCS</b>							
Fluoride (F)			105.6		%		90-110	07-JUN-19
<b>WG3075433-14</b>	<b>LCS</b>							
Fluoride (F)			94.2		%		90-110	07-JUN-19
<b>WG3075433-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>WG3075433-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>WG3075433-12</b>	<b>MS</b>	<b>L2287341-4</b>						
Fluoride (F)			117.5		%		75-125	07-JUN-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4668855</b>							
<b>WG3076314-15</b>	<b>DUP</b>	<b>L2287341-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-JUN-19
<b>WG3076314-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			113.0		%		80-120	13-JUN-19
<b>WG3076314-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			109.0		%		80-120	13-JUN-19
<b>WG3076314-13</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-JUN-19
<b>WG3076314-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	13-JUN-19
<b>WG3076314-16</b>	<b>MS</b>	<b>L2287341-2</b>						
Mercury (Hg)-Dissolved			75.8		%		70-130	13-JUN-19
<b>HG-T-CVAA-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 4 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4668855</b>							
<b>WG3076314-15</b>	<b>DUP</b>	<b>L2287341-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-JUN-19
<b>WG3076314-10</b>	<b>LCS</b>							
Mercury (Hg)-Total			108.0		%		80-120	13-JUN-19
<b>WG3076314-14</b>	<b>LCS</b>							
Mercury (Hg)-Total			107.0		%		80-120	13-JUN-19
<b>WG3076314-13</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	13-JUN-19
<b>WG3076314-9</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	13-JUN-19
<b>WG3076314-16</b>	<b>MS</b>	<b>L2287341-2</b>						
Mercury (Hg)-Total			84.5		%		70-130	13-JUN-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-16</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			100.9		%		80-120	13-JUN-19
Antimony (Sb)-Dissolved			99.3		%		80-120	13-JUN-19
Arsenic (As)-Dissolved			102.5		%		80-120	13-JUN-19
Barium (Ba)-Dissolved			101.5		%		80-120	13-JUN-19
Bismuth (Bi)-Dissolved			95.9		%		80-120	13-JUN-19
Boron (B)-Dissolved			97.9		%		80-120	13-JUN-19
Cadmium (Cd)-Dissolved			101.2		%		80-120	13-JUN-19
Calcium (Ca)-Dissolved			97.8		%		80-120	13-JUN-19
Chromium (Cr)-Dissolved			98.6		%		80-120	13-JUN-19
Cobalt (Co)-Dissolved			99.6		%		80-120	13-JUN-19
Copper (Cu)-Dissolved			98.1		%		80-120	13-JUN-19
Iron (Fe)-Dissolved			113.5		%		80-120	13-JUN-19
Lead (Pb)-Dissolved			97.4		%		80-120	13-JUN-19
Lithium (Li)-Dissolved			107.6		%		80-120	13-JUN-19
Magnesium (Mg)-Dissolved			92.5		%		80-120	13-JUN-19
Manganese (Mn)-Dissolved			101.3		%		80-120	13-JUN-19
Molybdenum (Mo)-Dissolved			102.2		%		80-120	13-JUN-19
Nickel (Ni)-Dissolved			100.1		%		80-120	13-JUN-19
Potassium (K)-Dissolved			102.8		%		80-120	13-JUN-19
Selenium (Se)-Dissolved			98.7		%		80-120	13-JUN-19
Silicon (Si)-Dissolved			111.3		%		60-140	13-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 5 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-16' LCS</b>		<b>TMRM</b>						
Silver (Ag)-Dissolved			96.5		%		80-120	13-JUN-19
Sodium (Na)-Dissolved			103.5		%		80-120	13-JUN-19
Strontium (Sr)-Dissolved			101.4		%		80-120	13-JUN-19
Thallium (Tl)-Dissolved			97.9		%		80-120	13-JUN-19
Tin (Sn)-Dissolved			100.6		%		80-120	13-JUN-19
Titanium (Ti)-Dissolved			100.1		%		80-120	13-JUN-19
Uranium (U)-Dissolved			91.6		%		80-120	13-JUN-19
Vanadium (V)-Dissolved			100.8		%		80-120	13-JUN-19
Zinc (Zn)-Dissolved			99.3		%		80-120	13-JUN-19
<b>WG3077282-17' LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.4		%		80-120	13-JUN-19
Antimony (Sb)-Dissolved			103.2		%		80-120	13-JUN-19
Arsenic (As)-Dissolved			103.1		%		80-120	13-JUN-19
Barium (Ba)-Dissolved			101.0		%		80-120	13-JUN-19
Bismuth (Bi)-Dissolved			96.6		%		80-120	13-JUN-19
Boron (B)-Dissolved			93.4		%		80-120	13-JUN-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	13-JUN-19
Calcium (Ca)-Dissolved			98.5		%		80-120	13-JUN-19
Chromium (Cr)-Dissolved			102.0		%		80-120	13-JUN-19
Cobalt (Co)-Dissolved			100.1		%		80-120	13-JUN-19
Copper (Cu)-Dissolved			98.2		%		80-120	13-JUN-19
Iron (Fe)-Dissolved			113.8		%		80-120	13-JUN-19
Lead (Pb)-Dissolved			95.8		%		80-120	13-JUN-19
Lithium (Li)-Dissolved			109.4		%		80-120	13-JUN-19
Magnesium (Mg)-Dissolved			94.3		%		80-120	13-JUN-19
Manganese (Mn)-Dissolved			101.3		%		80-120	13-JUN-19
Molybdenum (Mo)-Dissolved			104.3		%		80-120	13-JUN-19
Nickel (Ni)-Dissolved			99.6		%		80-120	13-JUN-19
Potassium (K)-Dissolved			106.6		%		80-120	13-JUN-19
Selenium (Se)-Dissolved			97.7		%		80-120	13-JUN-19
Silicon (Si)-Dissolved			114.5		%		60-140	13-JUN-19
Silver (Ag)-Dissolved			99.6		%		80-120	13-JUN-19
Sodium (Na)-Dissolved			103.7		%		80-120	13-JUN-19
Strontium (Sr)-Dissolved			103.7		%		80-120	13-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 6 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-17: LCS</b>		<b>TMRM</b>						
Thallium (Tl)-Dissolved			97.0		%		80-120	13-JUN-19
Tin (Sn)-Dissolved			101.0		%		80-120	13-JUN-19
Titanium (Ti)-Dissolved			99.99		%		80-120	13-JUN-19
Uranium (U)-Dissolved			90.9		%		80-120	13-JUN-19
Vanadium (V)-Dissolved			101.9		%		80-120	13-JUN-19
Zinc (Zn)-Dissolved			105.9		%		80-120	13-JUN-19
<b>WG3077282-19: LCS</b>		<b>TMRM</b>						
Aluminum (Al)-Dissolved			103.1		%		80-120	13-JUN-19
Antimony (Sb)-Dissolved			102.0		%		80-120	13-JUN-19
Arsenic (As)-Dissolved			99.5		%		80-120	13-JUN-19
Barium (Ba)-Dissolved			101.2		%		80-120	13-JUN-19
Bismuth (Bi)-Dissolved			106.8		%		80-120	13-JUN-19
Boron (B)-Dissolved			100.3		%		80-120	13-JUN-19
Cadmium (Cd)-Dissolved			101.0		%		80-120	13-JUN-19
Calcium (Ca)-Dissolved			101.0		%		80-120	13-JUN-19
Chromium (Cr)-Dissolved			99.3		%		80-120	13-JUN-19
Cobalt (Co)-Dissolved			99.6		%		80-120	13-JUN-19
Copper (Cu)-Dissolved			99.1		%		80-120	13-JUN-19
Iron (Fe)-Dissolved			113.5		%		80-120	13-JUN-19
Lead (Pb)-Dissolved			99.4		%		80-120	13-JUN-19
Lithium (Li)-Dissolved			110.4		%		80-120	13-JUN-19
Magnesium (Mg)-Dissolved			95.7		%		80-120	13-JUN-19
Manganese (Mn)-Dissolved			99.3		%		80-120	13-JUN-19
Molybdenum (Mo)-Dissolved			106.0		%		80-120	13-JUN-19
Nickel (Ni)-Dissolved			99.7		%		80-120	13-JUN-19
Potassium (K)-Dissolved			101.1		%		80-120	13-JUN-19
Selenium (Se)-Dissolved			99.3		%		80-120	13-JUN-19
Silicon (Si)-Dissolved			112.4		%		60-140	13-JUN-19
Silver (Ag)-Dissolved			102.1		%		80-120	13-JUN-19
Sodium (Na)-Dissolved			97.8		%		80-120	13-JUN-19
Strontium (Sr)-Dissolved			101.8		%		80-120	13-JUN-19
Thallium (Tl)-Dissolved			98.6		%		80-120	13-JUN-19
Tin (Sn)-Dissolved			101.7		%		80-120	13-JUN-19
Titanium (Ti)-Dissolved			96.6		%		80-120	13-JUN-19





## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 8 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-16 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
<b>WG3077282-17 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19





## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 9 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-17 MB</b>								
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
<b>WG3077282-19 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 10 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-19: MB</b>								
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	13-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
<b>WG3077282-19: MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	13-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 11 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670224</b>							
<b>WG3077282-19</b>	<b>MB</b>							
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670451</b>							
<b>WG3077545-20</b>	<b>DUP</b>	<b>L2287341-3</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	14-JUN-19
<b>WG3077545-10</b>	<b>LCS</b>							
Ammonia as N			98.9		%		85-115	13-JUN-19
<b>WG3077545-18</b>	<b>LCS</b>							
Ammonia as N			94.9		%		85-115	14-JUN-19
<b>WG3077545-6</b>	<b>LCS</b>							
Ammonia as N			98.9		%		85-115	13-JUN-19
<b>WG3077545-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-JUN-19
<b>WG3077545-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 12 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4670451								
WG3077545-9	MB							
Ammonia as N			<0.0050		mg/L		0.005	13-JUN-19
WG3077545-19	MS	L2287341-3						
Ammonia as N			84.1		%		75-125	14-JUN-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4666127								
WG3075433-11	DUP	L2287341-4						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3075433-10	LCS							
Nitrite (as N)			105.0		%		90-110	07-JUN-19
WG3075433-14	LCS							
Nitrite (as N)			101.9		%		90-110	07-JUN-19
WG3075433-13	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
WG3075433-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
WG3075433-12	MS	L2287341-4						
Nitrite (as N)			118.3		%		75-125	07-JUN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4666127								
WG3075433-11	DUP	L2287341-4						
Nitrate (as N)		<0.0050	0.0082	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3075433-10	LCS							
Nitrate (as N)			100.5		%		90-110	07-JUN-19
WG3075433-14	LCS							
Nitrate (as N)			102.0		%		90-110	07-JUN-19
WG3075433-13	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
WG3075433-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
WG3075433-12	MS	L2287341-4						
Nitrate (as N)			115.3		%		75-125	07-JUN-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4667329								
WG3075443-5	CRM	CL-ORP						
ORP			228		mV		210-230	12-JUN-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 13 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4663807							
WG3074075-12	LCS							
Phosphorus (P)-Total			104.1		%		80-120	11-JUN-19
WG3074075-11	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-JUN-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4670261							
WG3077603-12	DUP	L2287341-1						
pH		8.25	8.42	J	pH	0.17	0.2	13-JUN-19
WG3077603-11	LCS							
pH			7.03		pH		6.9-7.1	13-JUN-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4661969							
WG3071832-5	LCS							
Orthophosphate-Dissolved (as P)			100.3		%		80-120	08-JUN-19
WG3071832-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-JUN-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4666127							
WG3075433-11	DUP	L2287341-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3075433-10	LCS							
Sulfate (SO4)			102.4		%		90-110	07-JUN-19
WG3075433-14	LCS							
Sulfate (SO4)			101.7		%		90-110	07-JUN-19
WG3075433-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
WG3075433-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
WG3075433-12	MS	L2287341-4						
Sulfate (SO4)			116.4		%		75-125	07-JUN-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4668911							
WG3074810-2	LCS							
Total Dissolved Solids			96.9		%		85-115	12-JUN-19
WG3074810-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-JUN-19
<b>TKN-L-F-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 14 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4671467</b>							
<b>WG3079095-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	16-JUN-19
<b>WG3079095-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.2		%		75-125	16-JUN-19
<b>WG3079095-17</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.6		%		75-125	16-JUN-19
<b>WG3079095-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.5		%		75-125	16-JUN-19
<b>WG3079095-21</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.2		%		75-125	16-JUN-19
<b>WG3079095-25</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.7		%		75-125	16-JUN-19
<b>WG3079095-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	16-JUN-19
<b>WG3079095-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>WG3079095-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>WG3079095-16</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>WG3079095-20</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-JUN-19
<b>WG3079095-24</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>WG3079095-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>WG3079095-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>Batch</b>	<b>R4672212</b>							
<b>WG3080062-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.2		%		75-125	17-JUN-19
<b>WG3080062-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.8		%		75-125	17-JUN-19
<b>WG3080062-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.8		%		75-125	17-JUN-19
<b>WG3080062-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-19
<b>WG3080062-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-19



## Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 15 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4672212							
<b>WG3080062-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-JUN-19
<b>WG3080062-12 MS</b>		<b>L2287341-8</b>						
Total Kjeldahl Nitrogen			118.0		%		70-130	17-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4668276							
<b>WG3074791-6 LCS</b>								
Total Suspended Solids			101.8		%		85-115	12-JUN-19
<b>WG3074791-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	12-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4662406							
<b>WG3071711-3 DUP</b>		<b>L2287341-6</b>						
Turbidity		102	103		NTU	1.0	15	08-JUN-19
<b>WG3071711-2 LCS</b>								
Turbidity			97.0		%		85-115	08-JUN-19
<b>WG3071711-1 MB</b>								
Turbidity			<0.10		NTU		0.1	08-JUN-19

# Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 16 of 17

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2287341

Report Date: 26-JUN-19

Page 17 of 17

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	06-JUN-19 10:35	12-JUN-19 12:15	0.25	146	hours	EHTR-FM
	2	06-JUN-19 10:40	12-JUN-19 12:15	0.25	146	hours	EHTR-FM
	3	06-JUN-19 10:45	12-JUN-19 12:15	0.25	145	hours	EHTR-FM
	4	06-JUN-19 10:50	12-JUN-19 12:15	0.25	145	hours	EHTR-FM
	5	06-JUN-19 09:05	12-JUN-19 12:15	0.25	147	hours	EHTR-FM
	6	06-JUN-19 09:20	12-JUN-19 13:45	0.25	148	hours	EHTR-FM
	7	06-JUN-19 12:30	12-JUN-19 13:45	0.25	145	hours	EHTR-FM
	8	06-JUN-19 15:00	12-JUN-19 13:45	0.25	143	hours	EHTR-FM
pH							
	1	06-JUN-19 10:35	17-JUN-19 10:00	0.25	264	hours	EHTR-FM
	2	06-JUN-19 10:40	17-JUN-19 10:00	0.25	263	hours	EHTR-FM
	3	06-JUN-19 10:45	13-JUN-19 17:00	0.25	174	hours	EHTR-FM
	4	06-JUN-19 10:50	13-JUN-19 17:00	0.25	174	hours	EHTR-FM
	5	06-JUN-19 09:05	13-JUN-19 17:00	0.25	176	hours	EHTR-FM
	6	06-JUN-19 09:20	13-JUN-19 17:00	0.25	176	hours	EHTR-FM
	7	06-JUN-19 12:30	13-JUN-19 17:00	0.25	173	hours	EHTR-FM
	8	06-JUN-19 15:00	13-JUN-19 17:00	0.25	170	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	3	06-JUN-19 10:45	12-JUN-19 09:44	3	6	days	EHT
	4	06-JUN-19 10:50	12-JUN-19 09:44	3	6	days	EHT
	7	06-JUN-19 12:30	12-JUN-19 09:44	3	6	days	EHT
Nitrite in Water by IC (Low Level)							
	7	06-JUN-19 12:30	12-JUN-19 09:44	3	6	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2287341 were received on 07-JUN-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: \_\_\_\_\_ TURNAROUND TIME: \_\_\_\_\_ Regular \_\_\_\_\_ RUSH \_\_\_\_\_

Facility Name / Job# Teck Coal				Lab Name ALS Calgary				Report Format / Distribution			Excel	PDF	EDD
Project Manager Leilah Tate				Lab Contact Lyudmyla Shvets				Email 1: Leilah.Tate@teck.com			X	X	X
Email Leilah.Tate@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: teckcoal@equisonline.com			X	X	X
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE				Email 3: gregory.jones@golder.com			X	X	X
City Calgary Province AB				City Calgary Province AB				Email 4: nell.macdonald@teck.com					
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 5:					
Phone Number 1-604-831-3830				Phone Number 403 407 1794				PO number			VPO00617299		



L2287341-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL						
1 FR-TB-2B-2019-06-06-NP	FR-TB-2B	WG	N	2019/06/06	10:35	G	6	1	1	1	1	1	1						
2 FR-DC-3-2019-06-06-NP	FR-DC-3	WG	N		10:40	G	6	1	1	1	1	1	1						
3 FR-FLD-2019-06-06-NP	FR-FLD	WG	N		10:45	G	6	1	1	1	1	1	1						
4 FR-TRP-2019-06-06-NP	FR-TRP	WG	N		10:50	G	6	1	1	1	1	1	1						
5 FR-LM-1B-2019-06-06-NP	FR-LM-1B	WG	N		09:05	G	6	1	1	1	1	1	1						
6 FR-LM-1A-2019-06-06-NP	FR-LM-1A	WG	N		09:20	G	6	1	1	1	1	1	1						
7 FR-TB-2A-2019-06-06-NP	FR-TB-2A	WG	N		12:30	G	6	1	1	1	1	1	1						
8 FR-TBSSMW-1-2019-06-06-NP	FR-TBSSMW-1	WG	N		15:00	G	6	1	1	1	1	1	1						

All samples are field filtered and preserved as required.

*[Signature]*  
6/7 8:45

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Tuler Fortin	Mobile #	250 464 5514
				Sampler's Signature	<i>[Signature]</i>	Date/Time	6 June 2019

9c



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary, AB T2G 0R3 AB T2G 0R3

Date Received: 11-JUN-19  
Report Date: 23-JUN-19 12:15 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2289256  
Project P.O. #: VPO00617299  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190610  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2289256-1 WG 10-JUN-19 12:50 FR_KB-2_2019-06-10_NP	L2289256-2 WG 10-JUN-19 10:55 FR_DC-4_2019-06-10_NP	L2289256-3 WG 10-JUN-19 11:00 FR_FLD_2019-06-10_NP	L2289256-4 WG 10-JUN-19 11:05 FR_TRP_2019-06-10_NP	L2289256-5 WG 10-JUN-19 10:50 FR_KB-3A_2019-06-10_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1380	2000	<2.0	<2.0	1960
	Hardness (as CaCO3) (mg/L)	828	1200	<0.50	<0.50	1220
	pH (pH)	8.14	8.10	5.60	5.32	8.11
	ORP (mV)	430	402	420	456	436
	Total Suspended Solids (mg/L)	1.8	24.6	<1.0	<1.0	19.3
	Total Dissolved Solids (mg/L)	1110 <sup>DLHC</sup>	1690 <sup>DLHC</sup>	<10	<10	1760 <sup>DLHC</sup>
	Turbidity (NTU)	0.81	8.57	<0.10 <sup>HTD</sup>	<0.10	7.25
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	10.4	26.2	<1.0	1.0	25.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	296	316	<1.0	<1.0	312
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	296	316	<1.0	<1.0	312
	Ammonia as N (mg/L)	0.0069	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50	<0.50	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.18 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.020	<0.020	<0.10 <sup>DLHC</sup>
	Ion Balance (%)	104	103	0.0	0.0	106
	Nitrate (as N) (mg/L)	42.9 <sup>DLHC</sup>	69.2 <sup>DLHC</sup>	<0.0050	<0.0050	68.4 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	<0.050	<0.050	<0.25 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0013	<0.0010	<0.0010	0.0011
	Phosphorus (P)-Total (mg/L)	0.0027	0.0200	<0.0020	<0.0020	0.0189
	Sulfate (SO4) (mg/L)	346 <sup>DLHC</sup>	593 <sup>DLHC</sup>	<0.30	<0.30	586 <sup>DLHC</sup>
	Anion Sum (meq/L)	16.2	23.6	<0.10	<0.10	23.3
	Cation Sum (meq/L)	16.8	24.2	<0.10	<0.10	24.7
	Cation - Anion Balance (%)	1.8	1.3	0.0	0.0	2.9
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.63	0.52	<0.50	<0.50
Total Organic Carbon (mg/L)		0.60	0.68 <sup>DLM</sup>	<0.50	<0.50	0.86 <sup>DLM</sup>
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.000010 <sup>DLM</sup>	<0.0000050	<0.0000050	<0.000010 <sup>DLM</sup>
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00029	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>
	Barium (Ba)-Dissolved (mg/L)	0.0432	0.0639	<0.00010	<0.00010	0.0659
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.040 <sup>DLA</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2289256-6 WG 10-JUN-19 09:05 FR_KB-3B_2019-06-10_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1950			
	Hardness (as CaCO3) (mg/L)	1230			
	pH (pH)	8.14			
	ORP (mV)	452			
	Total Suspended Solids (mg/L)	8.0			
	Total Dissolved Solids (mg/L)	1830	DLHC		
	Turbidity (NTU)	8.93			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	28.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	297			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	297			
	Ammonia as N (mg/L)	<0.0050	DLHC		
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.13	DLHC		
	Ion Balance (%)	106			
	Nitrate (as N) (mg/L)	74.4	DLHC		
	Nitrite (as N) (mg/L)	0.0147	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011			
	Phosphorus (P)-Total (mg/L)	0.0216	DLHC		
	Sulfate (SO4) (mg/L)	584			
	Anion Sum (meq/L)	23.4			
	Cation Sum (meq/L)	24.9			
	Cation - Anion Balance (%)	3.0			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.61		
Total Organic Carbon (mg/L)		0.52			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.000010	DLM		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00012			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0731			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2289256-1	L2289256-2	L2289256-3	L2289256-4	L2289256-5
					WG	WG	WG	WG	WG
		10-JUN-19	12:50	FR_KB-2_2019-06-10_NP					
		10-JUN-19	10:55	'FR_DC-4_2019-06-10_NP					
		10-JUN-19	11:00	'FR_FLD_2019-06-10_NP					
		10-JUN-19	11:05	'FR_TRP_2019-06-10_NP					
		10-JUN-19	10:50	FR_KB-3A_2019-06-10_NP					
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>
	Boron (B)-Dissolved (mg/L)	0.022	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020 <sup>DLA</sup>
	Cadmium (Cd)-Dissolved (ug/L)	0.0934	0.012	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010 <sup>DLA</sup>
	Calcium (Ca)-Dissolved (mg/L)	182	285	<0.050	<0.050	<0.050	<0.050	289	
	Chromium (Cr)-Dissolved (mg/L)	0.00014	<0.00020 <sup>DLA</sup>	<0.00010	0.00012 <sup>RRV</sup>	<0.00020 <sup>DLA</sup>			
	Cobalt (Co)-Dissolved (ug/L)	0.31	2.99	<0.10	<0.10	3.06			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020 <sup>DLA</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>
	Lithium (Li)-Dissolved (mg/L)	0.0660	0.0387	<0.0010	<0.0010	0.0400			
	Magnesium (Mg)-Dissolved (mg/L)	90.7	119	<0.10	<0.10	122			
	Manganese (Mn)-Dissolved (mg/L)	0.00140	0.00251	<0.00010	<0.00010	0.00234			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000875	0.00041	<0.000050	<0.000050	0.00039			
	Nickel (Ni)-Dissolved (mg/L)	0.00330	0.0049	<0.00050	<0.00050	0.0050			
	Potassium (K)-Dissolved (mg/L)	3.55	2.17	<0.050	<0.050	2.17			
	Selenium (Se)-Dissolved (ug/L)	174	208	<0.050	<0.050	216			
	Silicon (Si)-Dissolved (mg/L)	2.10	3.21	<0.050	<0.050	3.22			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>			
	Sodium (Na)-Dissolved (mg/L)	3.12	4.33	<0.050	<0.050	4.22			
	Strontium (Sr)-Dissolved (mg/L)	0.153	0.316 <sup>DLA</sup>	<0.00020	<0.00020	0.319 <sup>DLA</sup>			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00573	0.00568 <sup>DLA</sup>	<0.000010	<0.000010	0.00558 <sup>DLA</sup>			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>			
	Zinc (Zn)-Dissolved (mg/L)	0.0033	0.0039	<0.0010	<0.0010	0.0103			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2289256-6			
		WG			
		10-JUN-19			
		09:05			
		FR_KB-3B_2019-06-10_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.018			
	Cadmium (Cd)-Dissolved (ug/L)	0.0296			
	Calcium (Ca)-Dissolved (mg/L)	278			
	Chromium (Cr)-Dissolved (mg/L)	0.00012			
	Cobalt (Co)-Dissolved (ug/L)	0.56			
	Copper (Cu)-Dissolved (mg/L)	<0.000050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0599			
	Magnesium (Mg)-Dissolved (mg/L)	130			
	Manganese (Mn)-Dissolved (mg/L)	0.00628			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000505			
	Nickel (Ni)-Dissolved (mg/L)	0.00057			
	Potassium (K)-Dissolved (mg/L)	3.24			
	Selenium (Se)-Dissolved (ug/L)	271			
	Silicon (Si)-Dissolved (mg/L)	2.74			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.40			
	Strontium (Sr)-Dissolved (mg/L)	0.263			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00725			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0016			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2289256-4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2289256-4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2289256-4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2289256-4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2289256-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.			



## Reference Information

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190610

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 1 of 14

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary, AB T2G 0R3 AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670745</b>							
<b>WG3078252-20</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.7		%		85-115	14-JUN-19
<b>WG3078252-19</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	14-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4671737</b>							
<b>WG3079070-9</b>	<b>DUP</b>	<b>L2289256-2</b>						
Alkalinity, Total (as CaCO3)		316	317		mg/L	0.3	20	15-JUN-19
<b>WG3079070-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.2		%		85-115	15-JUN-19
<b>WG3079070-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.4		%		85-115	15-JUN-19
<b>WG3079070-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUN-19
<b>WG3079070-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-3</b>	<b>DUP</b>	<b>L2289256-2</b>						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	14-JUN-19
<b>WG3076285-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.4		%		80-120	14-JUN-19
<b>WG3076285-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-JUN-19
<b>WG3076285-4</b>	<b>MS</b>	<b>L2289256-1</b>						
Beryllium (Be)-Dissolved			103.3		%		70-130	14-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668968</b>							
<b>WG3076514-2</b>	<b>LCS</b>							
Bromide (Br)			100.2		%		85-115	11-JUN-19
<b>WG3076514-6</b>	<b>LCS</b>							
Bromide (Br)			105.9		%		85-115	11-JUN-19
<b>WG3076514-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-JUN-19
<b>WG3076514-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4671093							
<b>WG3078725-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.1		%		80-120	15-JUN-19
<b>WG3078725-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-JUN-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4671093							
<b>WG3078725-6</b>	<b>LCS</b>							
Total Organic Carbon			107.8		%		80-120	15-JUN-19
<b>WG3078725-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	15-JUN-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4668968							
<b>WG3076514-2</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	11-JUN-19
<b>WG3076514-6</b>	<b>LCS</b>							
Chloride (Cl)			102.1		%		90-110	11-JUN-19
<b>WG3076514-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-JUN-19
<b>WG3076514-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-JUN-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4671737							
<b>WG3079070-9</b>	<b>DUP</b>	<b>L2289256-2</b>						
Conductivity (@ 25C)		2000	1980		uS/cm	0.9	10	15-JUN-19
<b>WG3079070-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.4		%		90-110	15-JUN-19
<b>WG3079070-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			105.9		%		90-110	15-JUN-19
<b>WG3079070-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-JUN-19
<b>WG3079070-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-JUN-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4668968							
<b>WG3076514-2</b>	<b>LCS</b>							
Fluoride (F)			110.0		%		90-110	11-JUN-19
<b>WG3076514-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4668968</b>							
<b>WG3076514-6</b>	<b>LCS</b>							
Fluoride (F)			109.7		%		90-110	11-JUN-19
<b>WG3076514-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-JUN-19
<b>WG3076514-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-JUN-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4671389</b>							
<b>WG3078522-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.2		%		80-120	17-JUN-19
<b>WG3078522-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.4		%		80-120	17-JUN-19
<b>WG3078522-1</b>	<b>MB</b>	<b>NP</b>	<0.000005C		mg/L		0.000005	17-JUN-19
Mercury (Hg)-Dissolved								
<b>WG3078522-5</b>	<b>MB</b>	<b>NP</b>	<0.000005C		mg/L		0.000005	17-JUN-19
Mercury (Hg)-Dissolved								
<b>WG3078522-8</b>	<b>MS</b>	<b>L2289256-6</b>	98.1		%		70-130	17-JUN-19
Mercury (Hg)-Dissolved								
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4671970</b>							
<b>WG3079648-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			102.6		%		80-120	17-JUN-19
<b>WG3079648-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	17-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-3</b>	<b>DUP</b>	<b>L2289256-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	14-JUN-19
Antimony (Sb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-JUN-19
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-JUN-19
Barium (Ba)-Dissolved		0.0639	0.0629		mg/L	1.6	20	14-JUN-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-JUN-19
Boron (B)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	14-JUN-19
Cadmium (Cd)-Dissolved		0.000012	<0.000010	RPD-NA	mg/L	N/A	20	14-JUN-19
Calcium (Ca)-Dissolved		285	296		mg/L	3.8	20	14-JUN-19
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-JUN-19
Cobalt (Co)-Dissolved		0.00299	0.00297		mg/L	0.6	20	14-JUN-19



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-3</b>	<b>DUP</b>	<b>L2289256-2</b>						
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	14-JUN-19
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	14-JUN-19
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	14-JUN-19
Lithium (Li)-Dissolved		0.0387	0.0404		mg/L	4.3	20	14-JUN-19
Magnesium (Mg)-Dissolved		119	122		mg/L	3.1	20	14-JUN-19
Manganese (Mn)-Dissolved		0.00251	0.00229		mg/L	9.3	20	14-JUN-19
Molybdenum (Mo)-Dissolved		0.00041	0.00042		mg/L	2.6	20	14-JUN-19
Nickel (Ni)-Dissolved		0.0049	0.0049		mg/L	0.2	20	14-JUN-19
Potassium (K)-Dissolved		2.17	2.18		mg/L	0.2	20	14-JUN-19
Selenium (Se)-Dissolved		0.208	0.211		mg/L	1.2	20	14-JUN-19
Silicon (Si)-Dissolved		3.21	3.08		mg/L	4.2	20	14-JUN-19
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	14-JUN-19
Sodium (Na)-Dissolved		4.33	4.27		mg/L	1.4	20	14-JUN-19
Strontium (Sr)-Dissolved		0.316	0.317		mg/L	0.1	20	14-JUN-19
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	14-JUN-19
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	14-JUN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	14-JUN-19
Uranium (U)-Dissolved		0.00568	0.00562		mg/L	1.0	20	14-JUN-19
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-JUN-19
Zinc (Zn)-Dissolved		0.0039	0.0041		mg/L	5.2	20	14-JUN-19
<b>WG3076285-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.2		%		80-120	14-JUN-19
Antimony (Sb)-Dissolved			97.7		%		80-120	14-JUN-19
Arsenic (As)-Dissolved			104.7		%		80-120	14-JUN-19
Barium (Ba)-Dissolved			107.4		%		80-120	14-JUN-19
Bismuth (Bi)-Dissolved			98.0		%		80-120	14-JUN-19
Boron (B)-Dissolved			95.2		%		80-120	14-JUN-19
Cadmium (Cd)-Dissolved			100.6		%		80-120	14-JUN-19
Calcium (Ca)-Dissolved			97.8		%		80-120	14-JUN-19
Chromium (Cr)-Dissolved			102.5		%		80-120	14-JUN-19
Cobalt (Co)-Dissolved			102.9		%		80-120	14-JUN-19
Copper (Cu)-Dissolved			99.5		%		80-120	14-JUN-19
Iron (Fe)-Dissolved			100.3		%		80-120	14-JUN-19
Lead (Pb)-Dissolved			102.0		%		80-120	14-JUN-19



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			99.8		%		80-120	14-JUN-19
Magnesium (Mg)-Dissolved			102.4		%		80-120	14-JUN-19
Manganese (Mn)-Dissolved			106.8		%		80-120	14-JUN-19
Molybdenum (Mo)-Dissolved			99.3		%		80-120	14-JUN-19
Nickel (Ni)-Dissolved			101.3		%		80-120	14-JUN-19
Potassium (K)-Dissolved			104.3		%		80-120	14-JUN-19
Selenium (Se)-Dissolved			97.0		%		80-120	14-JUN-19
Silicon (Si)-Dissolved			106.5		%		60-140	14-JUN-19
Silver (Ag)-Dissolved			94.6		%		80-120	14-JUN-19
Sodium (Na)-Dissolved			105.6		%		80-120	14-JUN-19
Strontium (Sr)-Dissolved			99.7		%		80-120	14-JUN-19
Thallium (Tl)-Dissolved			103.3		%		80-120	14-JUN-19
Tin (Sn)-Dissolved			98.3		%		80-120	14-JUN-19
Titanium (Ti)-Dissolved			102.1		%		80-120	14-JUN-19
Uranium (U)-Dissolved			98.5		%		80-120	14-JUN-19
Vanadium (V)-Dissolved			103.2		%		80-120	14-JUN-19
Zinc (Zn)-Dissolved			100.1		%		80-120	14-JUN-19
<b>WG3076285-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
<b>WG3076285-4</b>	<b>MS</b>	<b>L2289256-1</b>						
Aluminum (Al)-Dissolved			110.6		%		70-130	14-JUN-19
Antimony (Sb)-Dissolved			103.3		%		70-130	14-JUN-19
Arsenic (As)-Dissolved			117.1		%		70-130	14-JUN-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Bismuth (Bi)-Dissolved			93.7		%		70-130	14-JUN-19
Boron (B)-Dissolved			100.6		%		70-130	14-JUN-19
Cadmium (Cd)-Dissolved			103.4		%		70-130	14-JUN-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Chromium (Cr)-Dissolved			105.5		%		70-130	14-JUN-19
Cobalt (Co)-Dissolved			100.0		%		70-130	14-JUN-19
Copper (Cu)-Dissolved			95.7		%		70-130	14-JUN-19
Iron (Fe)-Dissolved			100.5		%		70-130	14-JUN-19
Lead (Pb)-Dissolved			97.7		%		70-130	14-JUN-19
Lithium (Li)-Dissolved			105.2		%		70-130	14-JUN-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Manganese (Mn)-Dissolved			105.8		%		70-130	14-JUN-19
Molybdenum (Mo)-Dissolved			104.8		%		70-130	14-JUN-19
Nickel (Ni)-Dissolved			96.5		%		70-130	14-JUN-19
Potassium (K)-Dissolved			109.7		%		70-130	14-JUN-19





## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076285-4</b>	<b>MS</b>	<b>L2289256-1</b>						
Selenium (Se)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Silicon (Si)-Dissolved			107.5		%		70-130	14-JUN-19
Silver (Ag)-Dissolved			96.5		%		70-130	14-JUN-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Thallium (Tl)-Dissolved			94.9		%		70-130	14-JUN-19
Tin (Sn)-Dissolved			101.6		%		70-130	14-JUN-19
Titanium (Ti)-Dissolved			112.4		%		70-130	14-JUN-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	14-JUN-19
Vanadium (V)-Dissolved			108.8		%		70-130	14-JUN-19
Zinc (Zn)-Dissolved			98.8		%		70-130	14-JUN-19
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.7		%		80-120	15-JUN-19
Antimony (Sb)-Dissolved			96.2		%		80-120	15-JUN-19
Arsenic (As)-Dissolved			98.7		%		80-120	15-JUN-19
Barium (Ba)-Dissolved			96.8		%		80-120	15-JUN-19
Bismuth (Bi)-Dissolved			99.8		%		80-120	15-JUN-19
Boron (B)-Dissolved			103.3		%		80-120	15-JUN-19
Cadmium (Cd)-Dissolved			98.6		%		80-120	15-JUN-19
Calcium (Ca)-Dissolved			100.5		%		80-120	15-JUN-19
Chromium (Cr)-Dissolved			98.2		%		80-120	15-JUN-19
Cobalt (Co)-Dissolved			98.4		%		80-120	15-JUN-19
Copper (Cu)-Dissolved			98.4		%		80-120	15-JUN-19
Iron (Fe)-Dissolved			100.5		%		80-120	15-JUN-19
Lead (Pb)-Dissolved			99.7		%		80-120	15-JUN-19
Lithium (Li)-Dissolved			90.4		%		80-120	15-JUN-19
Magnesium (Mg)-Dissolved			104.7		%		80-120	15-JUN-19
Manganese (Mn)-Dissolved			98.0		%		80-120	15-JUN-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	15-JUN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	15-JUN-19
Potassium (K)-Dissolved			101.3		%		80-120	15-JUN-19
Selenium (Se)-Dissolved			98.2		%		80-120	15-JUN-19
Silicon (Si)-Dissolved			100.5		%		60-140	15-JUN-19



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			100.1		%		80-120	15-JUN-19
Sodium (Na)-Dissolved			110.5		%		80-120	15-JUN-19
Strontium (Sr)-Dissolved			105.3		%		80-120	15-JUN-19
Thallium (Tl)-Dissolved			100.1		%		80-120	15-JUN-19
Tin (Sn)-Dissolved			100.9		%		80-120	15-JUN-19
Titanium (Ti)-Dissolved			91.7		%		80-120	15-JUN-19
Uranium (U)-Dissolved			100.4		%		80-120	15-JUN-19
Vanadium (V)-Dissolved			99.7		%		80-120	15-JUN-19
Zinc (Zn)-Dissolved			96.9		%		80-120	15-JUN-19
<b>WG3078219-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-19



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672589</b>							
<b>WG3079827-10</b>	<b>LCS</b>							
Ammonia as N			109.4		%		85-115	17-JUN-19
<b>WG3079827-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668968</b>							
<b>WG3076514-2</b>	<b>LCS</b>							
Nitrite (as N)			101.5		%		90-110	11-JUN-19
<b>WG3076514-6</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	11-JUN-19
<b>WG3076514-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-JUN-19
<b>WG3076514-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668968</b>							
<b>WG3076514-2</b>	<b>LCS</b>							
Nitrate (as N)			101.1		%		90-110	11-JUN-19
<b>WG3076514-6</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	11-JUN-19
<b>WG3076514-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-JUN-19
<b>WG3076514-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-JUN-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4670708							
WG3078039-7	CRM	CL-ORP						
ORP			222		mV		210-230	14-JUN-19
WG3078039-9	CRM	CL-ORP						
ORP			221		mV		210-230	14-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4669578							
WG3076672-18	LCS							
Phosphorus (P)-Total			100.4		%		80-120	13-JUN-19
WG3076672-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4671737							
WG3079070-9	DUP	L2289256-2						
pH		8.10	8.09	J	pH	0.01	0.2	15-JUN-19
WG3079070-11	LCS							
pH			7.09		pH		6.9-7.1	15-JUN-19
WG3079070-8	LCS							
pH			7.06		pH		6.9-7.1	15-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4664947							
WG3074344-10	LCS							
Orthophosphate-Dissolved (as P)			95.9		%		80-120	11-JUN-19
WG3074344-9	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4668968							
WG3076514-2	LCS							
Sulfate (SO4)			101.3		%		90-110	11-JUN-19
WG3076514-6	LCS							
Sulfate (SO4)			104.8		%		90-110	11-JUN-19
WG3076514-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-JUN-19
WG3076514-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	11-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4672482							
<b>WG3078854-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.8		%		85-115	16-JUN-19
<b>WG3078854-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	16-JUN-19
Batch	R4673646							
<b>WG3079241-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.9		%		85-115	17-JUN-19
<b>WG3079241-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-JUN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4672685							
<b>WG3080503-7</b>	<b>DUP</b>	<b>L2289256-4</b>						
Total Kjeldahl Nitrogen		<0.050	0.080	RPD-NA	mg/L	N/A	20	18-JUN-19
<b>WG3080503-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.0		%		75-125	18-JUN-19
<b>WG3080503-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	18-JUN-19
<b>WG3080503-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.0		%		75-125	18-JUN-19
<b>WG3080503-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-JUN-19
<b>WG3080503-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-JUN-19
<b>WG3080503-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-JUN-19
<b>WG3080503-8</b>	<b>MS</b>	<b>L2289256-4</b>						
Total Kjeldahl Nitrogen			111.2		%		70-130	18-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4672583							
<b>WG3078818-4</b>	<b>LCS</b>							
Total Suspended Solids			93.7		%		85-115	16-JUN-19
<b>WG3078818-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	16-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4667407							
<b>WG3075457-6</b>	<b>DUP</b>	<b>L2289256-6</b>						
Turbidity		8.93	8.87		NTU	0.7	15	12-JUN-19
<b>WG3075457-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4667407</b>							
<b>WG3075457-2</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	12-JUN-19
<b>WG3075457-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	12-JUN-19
<b>WG3075457-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-JUN-19
<b>WG3075457-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-JUN-19

# Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2289256

Report Date: 23-JUN-19

Page 14 of 14

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	10-JUN-19 12:50	14-JUN-19 16:35	0.25	100	hours	EHTR-FM
	2	10-JUN-19 10:55	14-JUN-19 16:35	0.25	102	hours	EHTR-FM
	3	10-JUN-19 11:00	14-JUN-19 16:35	0.25	102	hours	EHTR-FM
	4	10-JUN-19 11:05	14-JUN-19 16:35	0.25	102	hours	EHTR-FM
	5	10-JUN-19 10:50	14-JUN-19 16:35	0.25	102	hours	EHTR-FM
	6	10-JUN-19 09:05	14-JUN-19 16:35	0.25	103	hours	EHTR-FM
pH	1	10-JUN-19 12:50	15-JUN-19 10:00	0.25	117	hours	EHTR-FM
	2	10-JUN-19 10:55	15-JUN-19 10:00	0.25	119	hours	EHTR-FM
	3	10-JUN-19 11:00	15-JUN-19 10:00	0.25	119	hours	EHTR-FM
	4	10-JUN-19 11:05	15-JUN-19 10:00	0.25	119	hours	EHTR-FM
	5	10-JUN-19 10:50	15-JUN-19 10:00	0.25	119	hours	EHTR-FM
	6	10-JUN-19 09:05	15-JUN-19 10:00	0.25	121	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2289256 were received on 11-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190610**      TURNAROUND TIME: Regular      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00597209		

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL				
FR_KB-2_2019-06-10_NP	FR_KB-2	WG	N	6/10/2019	12:50	G	6	1	1	1	1	1	1				
FR_DC-4_2019-06-10_NP	FR_DC_4	WG	N	6/10/2019	10:55	G	6	1	1	1	1	1	1				
FR_FLD_2019-06-10_NP	FL_FLD	WG	N	6/10/2019	11:00	G	6	1	1	1	1	1	1				
FR_TRP_2019-06-10_NP	FL_TRP	WG	N	6/10/2019	11:05	G	6	1	1	1	1	1	1				
FR_KB-3A_2019-06-10_NP	FR_KB-3A	WG	N	6/10/2019	10:50	G	6	1	1	1	1	1	1				
FR_KB-3B_2019-06-10_NP	FR_KB-3B	WG	N	6/10/2019	9:05	G	6	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>Om</i>	6/11 9:00 AM

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	Tyler Fortin
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	
Emergency (1 Business Day) - 100% surcharge		Mobile #	250-464-5914
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	June 10, 2019

10 °C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 12-JUN-19  
Report Date: 25-JUN-19 15:22 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2290261  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190611  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2290261-1 WG 11-JUN-19 08:55 FR_KB-1-2019-06-11_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1390			
	Hardness (as CaCO3) (mg/L)	745			
	pH (pH)	7.96			
	ORP (mV)	447			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	1180	DLHC		
	Turbidity (NTU)	0.23			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	355			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	355			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.22	DLHC		
	Ion Balance (%)	83.6			
	Nitrate (as N) (mg/L)	45.1	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.25	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	372	DLHC		
	Anion Sum (meq/L)	18.1			
	Cation Sum (meq/L)	15.1			
	Cation - Anion Balance (%)	-8.9			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.86			
	Total Organic Carbon (mg/L)	1.10			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010			
	Antimony (Sb)-Dissolved (mg/L)	0.00044			
	Arsenic (As)-Dissolved (mg/L)	0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0342			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2290261-1 WG 11-JUN-19 08:55 FR_KB-1-2019-06-11_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.028			
	Cadmium (Cd)-Dissolved (ug/L)	0.476			
	Calcium (Ca)-Dissolved (mg/L)	158			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	2.08			
	Copper (Cu)-Dissolved (mg/L)	0.00022			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0618			
	Magnesium (Mg)-Dissolved (mg/L)	85.1			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00186			
	Nickel (Ni)-Dissolved (mg/L)	0.0148			
	Potassium (K)-Dissolved (mg/L)	4.12			
	Selenium (Se)-Dissolved (ug/L)	206			
	Silicon (Si)-Dissolved (mg/L)	2.36			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.15			
	Strontium (Sr)-Dissolved (mg/L)	0.165			
	Thallium (Tl)-Dissolved (mg/L)	0.000015			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00599			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0097			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			

## Reference Information

<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric





## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675228</b>							
<b>WG3081912-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.2		%		85-115	19-JUN-19
<b>WG3081912-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	19-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672773</b>							
<b>WG3080752-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	18-JUN-19
<b>WG3080752-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675146</b>							
<b>WG3082010-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			94.8		%		80-120	19-JUN-19
<b>WG3082010-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668097</b>							
<b>WG3076188-10</b>	<b>LCS</b>							
Bromide (Br)			103.5		%		85-115	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672407</b>							
<b>WG3080315-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.1		%		80-120	17-JUN-19
<b>WG3080315-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672407</b>							
<b>WG3080315-6</b>	<b>LCS</b>							
Total Organic Carbon			111.2		%		80-120	17-JUN-19
<b>WG3080315-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4668097							
<b>WG3076188-10</b>	<b>LCS</b>							
Chloride (Cl)			99.5		%		90-110	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4672773							
<b>WG3080752-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.2		%		90-110	18-JUN-19
<b>WG3080752-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4668097							
<b>WG3076188-10</b>	<b>LCS</b>							
Fluoride (F)			104.8		%		90-110	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-JUN-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R4671799							
<b>WG3079502-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.4		%		80-120	17-JUN-19
<b>WG3079517-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.0		%		80-120	17-JUN-19
<b>WG3079502-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-19
<b>WG3079517-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-19
<b>HG-T-CVAA-CL</b>	<b>Water</b>							
Batch	R4671799							
<b>WG3079517-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			106.0		%		80-120	17-JUN-19
<b>WG3079517-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	17-JUN-19
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
Batch	R4675146							
<b>WG3082010-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			95.5		%		80-120	19-JUN-19
Antimony (Sb)-Dissolved			93.5		%		80-120	19-JUN-19



## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675146</b>							
<b>WG3082010-6</b>	<b>LCS</b>	<b>TMRM</b>						
Arsenic (As)-Dissolved			91.0		%		80-120	19-JUN-19
Barium (Ba)-Dissolved			97.1		%		80-120	19-JUN-19
Bismuth (Bi)-Dissolved			112.7		%		80-120	19-JUN-19
Boron (B)-Dissolved			87.8		%		80-120	19-JUN-19
Cadmium (Cd)-Dissolved			94.7		%		80-120	19-JUN-19
Calcium (Ca)-Dissolved			96.4		%		80-120	19-JUN-19
Chromium (Cr)-Dissolved			99.2		%		80-120	19-JUN-19
Cobalt (Co)-Dissolved			96.0		%		80-120	19-JUN-19
Copper (Cu)-Dissolved			96.3		%		80-120	19-JUN-19
Iron (Fe)-Dissolved			112.0		%		80-120	19-JUN-19
Lead (Pb)-Dissolved			99.8		%		80-120	19-JUN-19
Lithium (Li)-Dissolved			95.3		%		80-120	19-JUN-19
Magnesium (Mg)-Dissolved			95.0		%		80-120	19-JUN-19
Manganese (Mn)-Dissolved			96.4		%		80-120	19-JUN-19
Molybdenum (Mo)-Dissolved			102.5		%		80-120	19-JUN-19
Nickel (Ni)-Dissolved			96.3		%		80-120	19-JUN-19
Potassium (K)-Dissolved			98.3		%		80-120	19-JUN-19
Selenium (Se)-Dissolved			91.3		%		80-120	19-JUN-19
Silicon (Si)-Dissolved			95.0		%		60-140	19-JUN-19
Silver (Ag)-Dissolved			102.4		%		80-120	19-JUN-19
Sodium (Na)-Dissolved			101.2		%		80-120	19-JUN-19
Strontium (Sr)-Dissolved			95.5		%		80-120	19-JUN-19
Thallium (Tl)-Dissolved			96.9		%		80-120	19-JUN-19
Tin (Sn)-Dissolved			93.6		%		80-120	19-JUN-19
Titanium (Ti)-Dissolved			92.5		%		80-120	19-JUN-19
Uranium (U)-Dissolved			99.9		%		80-120	19-JUN-19
Vanadium (V)-Dissolved			96.9		%		80-120	19-JUN-19
Zinc (Zn)-Dissolved			91.2		%		80-120	19-JUN-19
<b>WG3082010-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19



## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4675146</b>							
<b>WG3082010-5</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4674267</b>							
<b>WG3081042-2</b>	<b>LCS</b>							
Ammonia as N			103.8		%		85-115	18-JUN-19
<b>WG3081042-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4668097							
<b>WG3076188-10</b>	<b>LCS</b>							
Nitrite (as N)			101.7		%		90-110	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4668097							
<b>WG3076188-10</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4672223							
<b>WG3080115-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	17-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4670347							
<b>WG3077788-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			93.9		%		80-120	14-JUN-19
<b>WG3077788-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4672773							
<b>WG3080752-2</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	18-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4668318							
<b>WG3075984-19</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.9		%		80-120	12-JUN-19
<b>WG3075984-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4668097							
<b>WG3076188-10</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	12-JUN-19
<b>WG3076188-9</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4674011							
<b>WG3081707-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4672629							
<b>WG3079314-4 LCS</b>								
Total Suspended Solids			99.0		%		85-115	17-JUN-19
<b>WG3079314-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	17-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4669835							
<b>WG3076678-14 LCS</b>								
Turbidity			95.5		%		85-115	13-JUN-19
<b>WG3076678-13 MB</b>								
Turbidity			<0.10		NTU		0.1	13-JUN-19

# Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2290261

Report Date: 25-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	11-JUN-19 08:55	17-JUN-19 14:05	0.25	149	hours	EHTR-FM
pH	1	11-JUN-19 08:55	18-JUN-19 09:00	0.25	168	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2290261 were received on 12-JUN-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





COC ID: 2019 06 11

TURNAROUND TIME: Regular

RUSH:

Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	Leilah.Tate@teck.com		
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com		
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com		
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	neil.macdonald@teck.com		
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	40000597209		



L2290261-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUIRED											
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL						
FR-KB-1-2019-06-11-NR	FR-KB-1	WG	Y	2019/06/11	0855	G	6	1	1	1	1	1							
		WG	Y			G	6	1	1	1	1	1							
		WG	Y			G	6	1	1	1	1	1							
		WG	Y			G	6	1	1	1	1	1							
		WG	Y			G	6	1	1	1	1	1							

All samples are field filtered and preserved as required.

*Handwritten signature and date: 6/12/19*

Priority (2-3 business days) - 50% surcharge	Regular (default) X	Sampler's Name	Tyler Forten	Mobile #	250 464 5914
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	11 JUNE 2019.
For Emergency <1 Day, ASAP or Weeknd - Contact ALS					

9



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 14-JUN-19  
Report Date: 21-JUN-19 18:09 (MT)  
Version: FINAL

Client Phone: 250-865-5204

## Certificate of Analysis

Lab Work Order #: L2292060  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190613-1413  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2292060-1 WG 13-JUN-19 08:45 FR_GH_WELL4_Q TR_2019-04-01_N	L2292060-2 WG 13-JUN-19 10:48 FR_MW- SK1A_WG_2019- 06-13_N_17	L2292060-3 WG 13-JUN-19 11:47 FR_MW- SK1B_WG_2019- 06-13_N_16	L2292060-4 WG 13-JUN-19 13:00 FR_POTWELLS_Q TR_2019-04-01_N	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1400	1050	766	332
	Hardness (as CaCO3) (mg/L)	818	601	447	176
	pH (pH)	8.23	8.24	8.21	8.18
	ORP (mV)	450	458	330	454
	Total Suspended Solids (mg/L)	<1.0	<1.0	2.3	<1.0
	Total Dissolved Solids (mg/L)	1090 <sup>DLHC</sup>	820 <sup>DLHC</sup>	548 <sup>DLHC</sup>	204 <sup>DLHC</sup>
	Turbidity (NTU)	0.60	0.13	1.76	0.38
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.1	2.4	4.7	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	288	266	244	124
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	288	266	244	124
	Ammonia as N (mg/L)	0.0223	0.0134	0.0231	0.0198
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25	<0.050	<0.050
	Chloride (Cl) (mg/L)	5.2 <sup>DLHC</sup>	<2.5	5.04	<0.50
	Fluoride (F) (mg/L)	0.12 <sup>DLHC</sup>	0.21	0.167	0.236
	Ion Balance (%)	95.5	95.0	98.7	94.5
	Nitrate (as N) (mg/L)	43.1 <sup>DLHC</sup>	31.2	1.52	1.40
	Nitrite (as N) (mg/L)	0.0070 <sup>DLHC</sup>	<0.0050	0.0115	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.25 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.274	0.313
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	0.0021	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0115	<0.0020
	Sulfate (SO4) (mg/L)	400 <sup>DLHC</sup>	254	200	56.5
	Anion Sum (meq/L)	17.3	12.8	9.30	3.76
	Cation Sum (meq/L)	16.5	12.2	9.18	3.55
	Cation - Anion Balance (%)	-2.3	-2.6	-0.6	-2.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.94 <sup>DTC</sup>	<0.50
	Total Organic Carbon (mg/L)	0.51	<0.50	<0.50 <sup>DTC</sup>	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00026	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00022	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.109	0.0484	0.0614	0.0462
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2292060-1	L2292060-2	L2292060-3	L2292060-4
		Description	WG	WG	WG	WG
		Sampled Date	13-JUN-19	13-JUN-19	13-JUN-19	13-JUN-19
		Sampled Time	08:45	10:48	11:47	13:00
		Client ID	FR_GH_WELL4_Q TR_2019-04-01_N	FR_MW- SK1A_WG_2019- 06-13_N_17	FR_MW- SK1B_WG_2019- 06-13_N_16	FR_POTWELLS_Q TR_2019-04-01_N
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.011	0.013	0.013	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0529	0.0168	0.0099	0.0059
	Calcium (Ca)-Dissolved (mg/L)		194	135	117	44.6
	Chromium (Cr)-Dissolved (mg/L)		0.00011	<0.00010	0.00011	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		0.76	<0.10	0.22	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00064	0.00054	<0.00050	0.00328
	Iron (Fe)-Dissolved (mg/L)		0.015	<0.010	0.163	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	0.000119
	Lithium (Li)-Dissolved (mg/L)		0.0280	0.0434	0.0095	0.0048
	Magnesium (Mg)-Dissolved (mg/L)		81.0	63.9	37.9	15.7
	Manganese (Mn)-Dissolved (mg/L)		0.00035	<0.00010	0.278	0.00034
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000314	0.00169	0.000579	0.000679
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	0.00080	<0.00050
	Potassium (K)-Dissolved (mg/L)		1.74	2.73	1.03	0.579
	Selenium (Se)-Dissolved (ug/L)		140	114	1.98	8.73
	Silicon (Si)-Dissolved (mg/L)		2.76	1.71	3.58	1.50
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.99	2.74	4.45	0.552
	Strontium (Sr)-Dissolved (mg/L)		0.250	0.127	0.239	0.0842
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000012	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00418	0.00553	0.00188	0.000692
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0139	<0.0010	0.0055	0.0110

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP10	Samples Received with temperature >10 Degrees C - 15C

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2292060-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2292060-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2292060-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2292060-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2292060-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2292060-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190613-1413

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*  
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*  
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**  
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)

PO BOX 100  
ELKFORD BC V0B 1H0

Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4681192</b>							
<b>WG3084090-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.6		%		85-115	20-JUN-19
<b>WG3084090-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	20-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4681400</b>							
<b>WG3084717-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.9		%		85-115	21-JUN-19
<b>WG3084717-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.1		%		80-120	18-JUN-19
<b>WG3079789-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673849</b>							
<b>WG3081632-2</b>	<b>LCS</b>							
Bromide (Br)			101.9		%		85-115	15-JUN-19
<b>WG3081632-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677426</b>							
<b>WG3083040-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			83.8		%		80-120	19-JUN-19
<b>WG3083040-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			86.8		%		80-120	19-JUN-19
<b>WG3083040-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
<b>WG3083040-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
<b>WG3083040-4</b>	<b>MS</b>	<b>L2292060-4</b>						
Dissolved Organic Carbon			88.1		%		70-130	19-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4677426</b>							
<b>WG3083040-2</b>	<b>LCS</b>							
Total Organic Carbon			85.4		%		80-120	19-JUN-19
<b>WG3083040-6</b>	<b>LCS</b>							
Total Organic Carbon			89.5		%		80-120	19-JUN-19
<b>WG3083040-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
<b>WG3083040-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
<b>WG3083040-4</b>	<b>MS</b>	<b>L2292060-4</b>						
Total Organic Carbon			90.1		%		70-130	19-JUN-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4673849</b>							
<b>WG3081632-2</b>	<b>LCS</b>							
Chloride (Cl)			100.5		%		90-110	15-JUN-19
<b>WG3081632-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-JUN-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4681400</b>							
<b>WG3084717-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.7		%		90-110	21-JUN-19
<b>WG3084717-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4673849</b>							
<b>WG3081632-2</b>	<b>LCS</b>							
Fluoride (F)			104.5		%		90-110	15-JUN-19
<b>WG3081632-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-JUN-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4677175</b>							
<b>WG3081889-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.5		%		80-120	20-JUN-19
<b>WG3081889-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	18-JUN-19
Antimony (Sb)-Dissolved			95.9		%		80-120	18-JUN-19
Arsenic (As)-Dissolved			93.8		%		80-120	18-JUN-19
Barium (Ba)-Dissolved			98.2		%		80-120	18-JUN-19
Bismuth (Bi)-Dissolved			98.5		%		80-120	18-JUN-19
Boron (B)-Dissolved			97.6		%		80-120	18-JUN-19
Cadmium (Cd)-Dissolved			96.2		%		80-120	18-JUN-19
Calcium (Ca)-Dissolved			98.9		%		80-120	18-JUN-19
Chromium (Cr)-Dissolved			97.2		%		80-120	18-JUN-19
Cobalt (Co)-Dissolved			95.6		%		80-120	18-JUN-19
Copper (Cu)-Dissolved			94.5		%		80-120	18-JUN-19
Iron (Fe)-Dissolved			96.5		%		80-120	18-JUN-19
Lead (Pb)-Dissolved			100.3		%		80-120	18-JUN-19
Lithium (Li)-Dissolved			102.8		%		80-120	18-JUN-19
Magnesium (Mg)-Dissolved			101.9		%		80-120	18-JUN-19
Manganese (Mn)-Dissolved			97.9		%		80-120	18-JUN-19
Molybdenum (Mo)-Dissolved			99.1		%		80-120	18-JUN-19
Nickel (Ni)-Dissolved			95.9		%		80-120	18-JUN-19
Potassium (K)-Dissolved			99.6		%		80-120	18-JUN-19
Selenium (Se)-Dissolved			96.5		%		80-120	18-JUN-19
Silicon (Si)-Dissolved			98.2		%		60-140	18-JUN-19
Silver (Ag)-Dissolved			97.3		%		80-120	18-JUN-19
Sodium (Na)-Dissolved			98.0		%		80-120	18-JUN-19
Strontium (Sr)-Dissolved			98.9		%		80-120	18-JUN-19
Thallium (Tl)-Dissolved			103.3		%		80-120	18-JUN-19
Tin (Sn)-Dissolved			97.6		%		80-120	18-JUN-19
Titanium (Ti)-Dissolved			87.7		%		80-120	18-JUN-19
Uranium (U)-Dissolved			101.6		%		80-120	18-JUN-19
Vanadium (V)-Dissolved			98.8		%		80-120	18-JUN-19
Zinc (Zn)-Dissolved			94.4		%		80-120	18-JUN-19
<b>WG3079789-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4678290</b>							
<b>WG3082919-10</b>	<b>LCS</b>							
Ammonia as N			110.0		%		85-115	19-JUN-19
<b>WG3082919-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4673849							
<b>WG3081632-2</b>	<b>LCS</b>							
Nitrite (as N)			104.8		%		90-110	15-JUN-19
<b>WG3081632-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-JUN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4673849							
<b>WG3081632-2</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	15-JUN-19
<b>WG3081632-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4673389							
<b>WG3081363-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	18-JUN-19
<b>WG3081363-10</b>	<b>DUP</b>	<b>L2292060-4</b>						
ORP		454	444	J	mV	9.3	15	18-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4672817							
<b>WG3080724-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			97.6		%		80-120	18-JUN-19
<b>WG3080724-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4681400							
<b>WG3084717-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	21-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4671746							
<b>WG3078502-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	15-JUN-19
<b>WG3078502-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4673849							
<b>WG3081632-2 LCS</b>								
Sulfate (SO4)			101.1		%		90-110	15-JUN-19
<b>WG3081632-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	15-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4681281							
<b>WG3082773-5 LCS</b>								
Total Dissolved Solids			100.1		%		85-115	20-JUN-19
<b>WG3082773-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	20-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4681189							
<b>WG3084469-12 LCS</b>								
Total Kjeldahl Nitrogen			99.6		%		75-125	21-JUN-19
<b>WG3084469-16 LCS</b>								
Total Kjeldahl Nitrogen			100.0		%		75-125	21-JUN-19
<b>WG3084469-2 LCS</b>								
Total Kjeldahl Nitrogen			101.8		%		75-125	21-JUN-19
<b>WG3084469-20 LCS</b>								
Total Kjeldahl Nitrogen			100.2		%		75-125	21-JUN-19
<b>WG3084469-22 LCS</b>								
Total Kjeldahl Nitrogen			101.3		%		75-125	21-JUN-19
<b>WG3084469-25 LCS</b>								
Total Kjeldahl Nitrogen			102.5		%		75-125	21-JUN-19
<b>WG3084469-5 LCS</b>								
Total Kjeldahl Nitrogen			101.1		%		75-125	21-JUN-19
<b>WG3084469-8 LCS</b>								
Total Kjeldahl Nitrogen			101.9		%		75-125	21-JUN-19
<b>WG3084469-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-11 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-19 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19



## Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681189</b>							
<b>WG3084469-24</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681213</b>							
<b>WG3082774-4</b>	<b>LCS</b>							
Total Suspended Solids			89.7		%		85-115	20-JUN-19
<b>WG3082774-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4671379</b>							
<b>WG3078615-8</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	15-JUN-19
<b>WG3078615-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-JUN-19

# Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2292060

Report Date: 21-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	13-JUN-19 08:45	18-JUN-19 13:15	0.25	125	hours	EHTR-FM
	2	13-JUN-19 10:48	18-JUN-19 13:15	0.25	122	hours	EHTR-FM
	3	13-JUN-19 11:47	18-JUN-19 13:15	0.25	121	hours	EHTR-FM
	4	13-JUN-19 13:00	18-JUN-19 13:15	0.25	120	hours	EHTR-FM
pH							
	1	13-JUN-19 08:45	21-JUN-19 09:00	0.25	192	hours	EHTR-FM
	2	13-JUN-19 10:48	21-JUN-19 09:00	0.25	190	hours	EHTR-FM
	3	13-JUN-19 11:47	21-JUN-19 09:00	0.25	189	hours	EHTR-FM
	4	13-JUN-19 13:00	21-JUN-19 09:00	0.25	188	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2292060 were received on 14-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190613-1413**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	dylan.begin@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	chelsea.jensen@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC					
FR_GH_WELLS_QTR_2019-04-01_N	FR_GH_WELL4	WG		2019/06/13	08:45	G	5	1	1	1	1	1					
FR_MW-SK1A_WG_2019-06-13_N_17	FR_MW-SK1A	WG		2019/06/13	10:48	G	5	1	1	1	1	1					
FR_MW-SK1B_WG_2019-06-13_N_16	FR_MW-SK1B	WG		2019/06/13	11:47	G	5	1	1	1	1	1					
FR_POTWELLS_QTR_2019-04-01_N	FR_POTWELLS	WG		2019/06/13	13:00	G	5	1	1	1	1	1					



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jared Cayenne	June 13, 2019	<i>DK</i>	<i>6/14 0900</i>

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Jared Cayenne
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	
Emergency (1 Business Day) - 100% surcharge		Mobile #	2504219457
For Emergency <1 Day, ASAP or Weekend - Contact ALS		Date/Time	June 13, 2019

15°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 15-JUN-19  
Report Date: 24-JUN-19 16:26 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2292416  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190614-1032  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2292416-1 WG 14-JUN-19 09:30 FR_GCMW- 2_QTR_2019-04- 01_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1170			
	Hardness (as CaCO3) (mg/L)	623			
	pH (pH)	8.15			
	ORP (mV)	433			
	Total Suspended Solids (mg/L)	1.6			
	Total Dissolved Solids (mg/L)	817	DLHC		
	Turbidity (NTU)	1.46			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	198			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	198			
	Ammonia as N (mg/L)	<0.0050	DLHC		
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	<2.5	DLHC		
	Fluoride (F) (mg/L)	0.22	DLHC		
	Ion Balance (%)	95.0			
	Nitrate (as N) (mg/L)	35.7	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0022	DLHC		
	Sulfate (SO4) (mg/L)	327			
	Anion Sum (meq/L)	13.3			
	Cation Sum (meq/L)	12.7			
	Cation - Anion Balance (%)	-2.6			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.80			
	Total Organic Carbon (mg/L)	0.67			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00047			
	Arsenic (As)-Dissolved (mg/L)	0.00012			
	Barium (Ba)-Dissolved (mg/L)	0.0621			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2292416-1			
		Description	WG			
		Sampled Date	14-JUN-19			
		Sampled Time	09:30			
		Client ID	FR_GCMW- 2_QTR_2019-04- 01_N			
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.016			
	Cadmium (Cd)-Dissolved (ug/L)		0.0471			
	Calcium (Ca)-Dissolved (mg/L)		133			
	Chromium (Cr)-Dissolved (mg/L)		0.00012			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00173			
	Iron (Fe)-Dissolved (mg/L)		<0.010			
	Lead (Pb)-Dissolved (mg/L)		0.000076			
	Lithium (Li)-Dissolved (mg/L)		0.130			
	Magnesium (Mg)-Dissolved (mg/L)		70.5			
	Manganese (Mn)-Dissolved (mg/L)		0.00032			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00188			
	Nickel (Ni)-Dissolved (mg/L)		0.00222			
	Potassium (K)-Dissolved (mg/L)		3.19			
	Selenium (Se)-Dissolved (ug/L)		73.8			
	Silicon (Si)-Dissolved (mg/L)		2.11			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		3.13			
	Strontium (Sr)-Dissolved (mg/L)		0.203			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00592			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0024			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2292416-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2292416-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2292416-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2292416-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2292416-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2292416-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2292416-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2292416-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2292416-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2292416-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)

## Reference Information

should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190614-1032

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4682901							
<b>WG3086145-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.6		%		85-115	21-JUN-19
<b>WG3086145-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	21-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4682757							
<b>WG3086102-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.4		%		85-115	21-JUN-19
<b>WG3086102-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4675369							
<b>WG3080935-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	19-JUN-19
<b>WG3080935-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4671066							
<b>WG3078659-6</b>	<b>LCS</b>							
Bromide (Br)			100.8		%		85-115	15-JUN-19
<b>WG3078659-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4680799							
<b>WG3084127-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.7		%		80-120	20-JUN-19
<b>WG3084127-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4680799							
<b>WG3084127-6</b>	<b>LCS</b>							
Total Organic Carbon			97.4		%		80-120	20-JUN-19
<b>WG3084127-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	20-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4671066							
<b>WG3078659-6</b>	<b>LCS</b>							
Chloride (Cl)			100.1		%		90-110	15-JUN-19
<b>WG3078659-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4682757							
<b>WG3086102-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			104.4		%		90-110	21-JUN-19
<b>WG3086102-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4671066							
<b>WG3078659-6</b>	<b>LCS</b>							
Fluoride (F)			103.6		%		90-110	15-JUN-19
<b>WG3078659-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-JUN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4680876							
<b>WG3081843-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.1		%		80-120	21-JUN-19
<b>WG3081843-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-JUN-19
<b>WG3081843-4</b>	<b>MS</b>	<b>L2292416-1</b>						
Mercury (Hg)-Dissolved			91.2		%		70-130	21-JUN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4675369							
<b>WG3080935-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.9		%		80-120	19-JUN-19
Antimony (Sb)-Dissolved			101.4		%		80-120	19-JUN-19
Arsenic (As)-Dissolved			95.1		%		80-120	19-JUN-19
Barium (Ba)-Dissolved			100.6		%		80-120	19-JUN-19
Bismuth (Bi)-Dissolved			102.2		%		80-120	19-JUN-19
Boron (B)-Dissolved			96.1		%		80-120	19-JUN-19
Cadmium (Cd)-Dissolved			95.6		%		80-120	19-JUN-19
Calcium (Ca)-Dissolved			100.7		%		80-120	19-JUN-19
Chromium (Cr)-Dissolved			95.5		%		80-120	19-JUN-19



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675369</b>							
<b>WG3080935-2</b>	<b>LCS</b>							
Cobalt (Co)-Dissolved			96.5		%		80-120	19-JUN-19
Copper (Cu)-Dissolved			93.7		%		80-120	19-JUN-19
Iron (Fe)-Dissolved			97.0		%		80-120	19-JUN-19
Lead (Pb)-Dissolved			97.2		%		80-120	19-JUN-19
Lithium (Li)-Dissolved			100.2		%		80-120	19-JUN-19
Magnesium (Mg)-Dissolved			98.2		%		80-120	19-JUN-19
Manganese (Mn)-Dissolved			99.2		%		80-120	19-JUN-19
Molybdenum (Mo)-Dissolved			98.2		%		80-120	19-JUN-19
Nickel (Ni)-Dissolved			94.9		%		80-120	19-JUN-19
Potassium (K)-Dissolved			103.4		%		80-120	19-JUN-19
Selenium (Se)-Dissolved			99.2		%		80-120	19-JUN-19
Silicon (Si)-Dissolved			113.8		%		60-140	19-JUN-19
Silver (Ag)-Dissolved			106.4		%		80-120	19-JUN-19
Sodium (Na)-Dissolved			97.5		%		80-120	19-JUN-19
Strontium (Sr)-Dissolved			99.6		%		80-120	19-JUN-19
Thallium (Tl)-Dissolved			98.0		%		80-120	19-JUN-19
Tin (Sn)-Dissolved			99.8		%		80-120	19-JUN-19
Titanium (Ti)-Dissolved			93.3		%		80-120	19-JUN-19
Uranium (U)-Dissolved			100.9		%		80-120	19-JUN-19
Vanadium (V)-Dissolved			98.1		%		80-120	19-JUN-19
Zinc (Zn)-Dissolved			97.9		%		80-120	19-JUN-19
<b>WG3080935-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-JUN-19



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675369</b>							
<b>WG3080935-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4681235</b>							
<b>WG3084290-18</b>	<b>LCS</b>							
Ammonia as N			97.0		%		85-115	20-JUN-19
<b>WG3084290-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4671066</b>							
<b>WG3078659-6</b>	<b>LCS</b>							
Nitrite (as N)			103.0		%		90-110	15-JUN-19
<b>WG3078659-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4671066</b>							
<b>WG3078659-6</b>	<b>LCS</b>							
Nitrate (as N)			100.5		%		90-110	15-JUN-19
<b>WG3078659-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4671066							
<b>WG3078659-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	15-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4673389							
<b>WG3081363-9 CRM</b>		<b>CL-ORP</b>						
ORP			225		mV		210-230	18-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4672817							
<b>WG3080724-14 LCS</b>								
Phosphorus (P)-Total			97.6		%		80-120	18-JUN-19
<b>WG3080724-13 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4682757							
<b>WG3086102-11 LCS</b>								
pH			7.02		pH		6.9-7.1	21-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4671746							
<b>WG3078502-18 LCS</b>								
Orthophosphate-Dissolved (as P)			97.9		%		80-120	15-JUN-19
<b>WG3078502-17 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4671066							
<b>WG3078659-6 LCS</b>								
Sulfate (SO4)			101.2		%		90-110	15-JUN-19
<b>WG3078659-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	15-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4682310							
<b>WG3084315-2 LCS</b>								
Total Dissolved Solids			95.4		%		85-115	21-JUN-19
<b>WG3084315-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	21-JUN-19



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681189</b>							
<b>WG3084469-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.6		%		75-125	21-JUN-19
<b>WG3084469-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.0		%		75-125	21-JUN-19
<b>WG3084469-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.8		%		75-125	21-JUN-19
<b>WG3084469-20</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.2		%		75-125	21-JUN-19
<b>WG3084469-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	21-JUN-19
<b>WG3084469-25</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.5		%		75-125	21-JUN-19
<b>WG3084469-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	21-JUN-19
<b>WG3084469-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.9		%		75-125	21-JUN-19
<b>WG3084469-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-11</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-19</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-24</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681213</b>							
<b>WG3082774-6</b>	<b>LCS</b>							
Total Suspended Solids			91.2		%		85-115	20-JUN-19
<b>WG3082774-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-JUN-19



## Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4671379</b>							
<b>WG3078615-8</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	15-JUN-19
<b>WG3078615-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-JUN-19

# Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2292416

Report Date: 24-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	14-JUN-19 09:30	18-JUN-19 14:30	0.25	101	hours	EHTR-FM
pH	1	14-JUN-19 09:30	21-JUN-19 12:00	0.25	170	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:


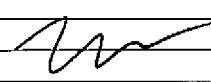

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2292416 were received on 15-JUN-19 08:17.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> 20190614-1032		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>														
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>												
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD									
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets		Email 1:	neil.macdonald@teck.com	X	X	X								
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	dylan.begin@teck.com	X	X	X								
Address	PO Box 100			Address	2559 29 Street NE		Email 3:	chelsea.jensong@teck.com	X	X	X								
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X							
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughead@teck.com	X	X	X							
Phone Number	1-250-865-5204			Phone Number	403 407 1794		PO number												
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>					Filtered ? F: Field, L: Lab, FL: Field & Lab, N: None										
 L2292416-COFC	Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	F	F	F	F						
									ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
FR_GCMW-2_QTR_2019-04-01_N	FR_GCMW-2	WG			2019/06/14	09:30	G	5	H2SO4	HCL	HNO3	NONE	H2SO4						
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>				<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>			<b>DATE/TIME</b>								
				Jared Cayenne			June 14, 2019				June 15 <sup>th</sup> 2019 8:17 AM								
<b>SERVICE REQUEST (rush - subject to availability)</b>				Sampler's Name		Sampler's Signature		Mobile #		Date/Time									
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS				Jared Cayenne				2504219457		June 14, 2019									

6°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 25-JUL-19  
Report Date: 07-AUG-19 15:08 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2316991  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190724-1346  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2316991-1 WG 24-JUL-19 10:49 FR_HMW3_QTR_2 019-07-01_N	L2316991-2 WG 24-JUL-19 12:00 FR_TRP_QTR_201 9-07-01_N		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	677	<2.0		
	Hardness (as CaCO3) (mg/L)	347	<0.50		
	pH (pH)	8.16	5.59		
	ORP (mV)	412	482		
	Total Suspended Solids (mg/L)	4.4	<1.0		
	Total Dissolved Solids (mg/L)	469 <sup>DLHC</sup>	<10		
	Turbidity (NTU)	5.29	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.2	1.2		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	182	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	182	<1.0		
	Ammonia, Total (as N) (mg/L)	0.134 <sup>RRV</sup>	0.0385 <sup>RRV</sup>		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Chloride (Cl) (mg/L)	<0.50	<0.50		
	Fluoride (F) (mg/L)	0.302	<0.020		
	Ion Balance (%)	96.3	0.0		
	Nitrate (as N) (mg/L)	7.02	<0.0050		
	Nitrite (as N) (mg/L)	0.0019	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0109	<0.0020		
	Sulfate (SO4) (mg/L)	151	<0.30		
	Anion Sum (meq/L)	7.30	<0.10		
	Cation Sum (meq/L)	7.03	<0.10		
	Cation - Anion Balance (%)	-1.9	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	0.73	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0073	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00021	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00017	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	0.0260	<0.00010		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2316991-1 WG 24-JUL-19 10:49 FR_HMW3_QTR_2 019-07-01_N	L2316991-2 WG 24-JUL-19 12:00 FR_TRP_QTR_201 9-07-01_N		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.013	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	0.0178	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	82.3	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	0.00013	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.16	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050		
	Iron (Fe)-Dissolved (mg/L)	0.308	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0215	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	34.2	<0.10		
	Manganese (Mn)-Dissolved (mg/L)	0.0608	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00112	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	0.00094	<0.00050		
	Potassium (K)-Dissolved (mg/L)	1.75	<0.050		
	Selenium (Se)-Dissolved (ug/L)	42.0	<0.050		
	Silicon (Si)-Dissolved (mg/L)	1.48	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	1.05	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	0.0943	<0.00020		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00150	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0011	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

**Additional Comments for Sample Listed:**

Samplenum	Matrix	Report Remarks	Sample Comment:
-----------	--------	----------------	-----------------

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
---------------------	-----------	-----------	-----------------------------

**Qualifiers for Individual Parameters Listed:**

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-F-ED** Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190724-1346

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4730790							
<b>WG3119112-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.9		%		85-115	29-JUL-19
<b>WG3119112-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	29-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4730812							
<b>WG3119090-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	29-JUL-19
<b>WG3119090-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4731239							
<b>WG3119383-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	30-JUL-19
<b>WG3119383-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4730228							
<b>WG3118546-6</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	25-JUL-19
<b>WG3118546-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4728440							
<b>WG3117141-3</b>	<b>DUP</b>	<b>L2316991-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	26-JUL-19
<b>WG3117141-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.0		%		80-120	26-JUL-19
<b>WG3117141-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JUL-19
<b>WG3117141-4</b>	<b>MS</b>	<b>L2316991-2</b>						
Dissolved Organic Carbon			104.5		%		70-130	26-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4728440							
<b>WG3117141-3</b>	<b>DUP</b>	<b>L2316991-1</b>						
Total Organic Carbon		0.73	0.75		mg/L	3.4	20	26-JUL-19
<b>WG3117141-2</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4728440</b>							
<b>WG3117141-2</b>	<b>LCS</b>							
Total Organic Carbon			106.5		%		80-120	26-JUL-19
<b>WG3117141-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-JUL-19
<b>WG3117141-4</b>	<b>MS</b>	<b>L2316991-2</b>						
Total Organic Carbon			105.7		%		70-130	26-JUL-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4730228</b>							
<b>WG3118546-6</b>	<b>LCS</b>							
Chloride (Cl)			100.9		%		90-110	25-JUL-19
<b>WG3118546-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-JUL-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4730812</b>							
<b>WG3119090-20</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.1		%		90-110	29-JUL-19
<b>WG3119090-19</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-JUL-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4730228</b>							
<b>WG3118546-6</b>	<b>LCS</b>							
Fluoride (F)			106.6		%		90-110	25-JUL-19
<b>WG3118546-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	25-JUL-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731221</b>							
<b>WG3118447-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.98		%		80-120	30-JUL-19
Mercury (Hg)-Dissolved			99.98		%		80-120	30-JUL-19
<b>WG3118447-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JUL-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731239</b>							
<b>WG3119383-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.3		%		80-120	30-JUL-19
Antimony (Sb)-Dissolved			93.1		%		80-120	30-JUL-19
Arsenic (As)-Dissolved			96.2		%		80-120	30-JUL-19



## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4731239</b>							
<b>WG3119383-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			98.3		%		80-120	30-JUL-19
Bismuth (Bi)-Dissolved			97.3		%		80-120	30-JUL-19
Boron (B)-Dissolved			96.8		%		80-120	30-JUL-19
Cadmium (Cd)-Dissolved			99.6		%		80-120	30-JUL-19
Calcium (Ca)-Dissolved			98.2		%		80-120	30-JUL-19
Chromium (Cr)-Dissolved			100.4		%		80-120	30-JUL-19
Cobalt (Co)-Dissolved			96.9		%		80-120	30-JUL-19
Copper (Cu)-Dissolved			97.5		%		80-120	30-JUL-19
Iron (Fe)-Dissolved			101.2		%		80-120	30-JUL-19
Lead (Pb)-Dissolved			99.6		%		80-120	30-JUL-19
Lithium (Li)-Dissolved			96.5		%		80-120	30-JUL-19
Magnesium (Mg)-Dissolved			99.7		%		80-120	30-JUL-19
Manganese (Mn)-Dissolved			99.5		%		80-120	30-JUL-19
Molybdenum (Mo)-Dissolved			97.6		%		80-120	30-JUL-19
Nickel (Ni)-Dissolved			97.0		%		80-120	30-JUL-19
Potassium (K)-Dissolved			104.9		%		80-120	30-JUL-19
Selenium (Se)-Dissolved			100.9		%		80-120	30-JUL-19
Silicon (Si)-Dissolved			103.9		%		60-140	30-JUL-19
Silver (Ag)-Dissolved			92.3		%		80-120	30-JUL-19
Sodium (Na)-Dissolved			105.3		%		80-120	30-JUL-19
Strontium (Sr)-Dissolved			100.2		%		80-120	30-JUL-19
Thallium (Tl)-Dissolved			95.8		%		80-120	30-JUL-19
Tin (Sn)-Dissolved			97.6		%		80-120	30-JUL-19
Titanium (Ti)-Dissolved			98.3		%		80-120	30-JUL-19
Uranium (U)-Dissolved			98.7		%		80-120	30-JUL-19
Vanadium (V)-Dissolved			100.9		%		80-120	30-JUL-19
Zinc (Zn)-Dissolved			96.6		%		80-120	30-JUL-19
<b>WG3119383-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JUL-19



## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4731239</b>							
<b>WG3119383-1</b>	<b>MB</b>	<b>NP</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JUL-19
<b>NH3-F-ED</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739275</b>							
<b>WG3123813-18</b>	<b>LCS</b>							
Ammonia, Total (as N)			108.4		%		85-115	02-AUG-19
<b>WG3123813-17</b>	<b>MB</b>							
Ammonia, Total (as N)			<0.0050		mg/L		0.005	02-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4730228</b>							
<b>WG3118546-6</b>	<b>LCS</b>							
Nitrite (as N)			102.0		%		90-110	25-JUL-19
<b>WG3118546-5</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4730228							
<b>WG3118546-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	25-JUL-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4730823							
<b>WG3117902-11 LCS</b>								
Total Dissolved Solids			102.8		%		85-115	29-JUL-19
<b>WG3117902-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	29-JUL-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4729103							
<b>WG3117508-33 DUP</b>		<b>L2316991-2</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-JUL-19
<b>WG3117508-18 LCS</b>								
Total Kjeldahl Nitrogen			92.9		%		75-125	28-JUL-19
<b>WG3117508-22 LCS</b>								
Total Kjeldahl Nitrogen			94.2		%		75-125	28-JUL-19
<b>WG3117508-26 LCS</b>								
Total Kjeldahl Nitrogen			94.7		%		75-125	28-JUL-19
<b>WG3117508-30 LCS</b>								
Total Kjeldahl Nitrogen			92.4		%		75-125	28-JUL-19
<b>WG3117508-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-25 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-29 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-34 MS</b>		<b>L2316991-2</b>						
Total Kjeldahl Nitrogen			110.2		%		70-130	28-JUL-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4733208							
<b>WG3118477-6 LCS</b>								
Total Suspended Solids			97.4		%		85-115	30-JUL-19
<b>WG3118477-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	30-JUL-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4727148							
<b>WG3115683-11 LCS</b>								
Turbidity			94.5		%		85-115	25-JUL-19
<b>WG3115683-10 MB</b>								
Turbidity			<0.10		NTU		0.1	25-JUL-19

# Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2316991

Report Date: 07-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	24-JUL-19 10:49	26-JUL-19 15:15	0.25	52	hours	EHTR-FM
	2	24-JUL-19 12:00	26-JUL-19 15:15	0.25	51	hours	EHTR-FM
pH	1	24-JUL-19 10:49	29-JUL-19 13:00	0.25	122	hours	EHTR-FM
	2	24-JUL-19 12:00	29-JUL-19 13:00	0.25	121	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2316991 were received on 25-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190724-1346**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudnyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudnyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	Jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - P: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HIG-D-CYAF-VA	ALS_BrCL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
FR_HMW3_QTR_2019-07-01_N	FR_HMW3	WG		2019/07/24	10:49	G	4	1	1	1	1	1						
FR_TRP_QTR_2019-07-01_N	FR_TRP	WG		2019/07/24	12:00	G	4	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Cruz Canlas	DATE/TIME July 24, 2019	ACCEPTED BY/AFFILIATION <i>AK</i>	DATE/TIME <i>7/25/19</i>
--	--	----------------------------	--------------------------------------	-----------------------------

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) X	Cruz Canlas	Cruz Canlas	250-433-6253	July 24, 2019
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

102



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 26-JUL-19  
Report Date: 05-AUG-19 13:31 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2317812  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190725-1337  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2317812-1 WG 25-JUL-19 12:45 FR_MW- 1B_QTR_2019-07- 01_N	L2317812-2 WG 24-JUL-19 12:45 FR_HMW5_QTR_2 019-07-01_N	L2317812-3 WG 25-JUL-19 10:00 FR_HMW1D_QTR _2019-07-01_N	L2317812-4 WG 25-JUL-19 09:57 FR_HMW1S_QTR_ 2019-07-01_N	L2317812-5 WG 25-JUL-19 09:00 FR_HMW2_QTR_2 019-07-01_N	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	488	386	3930	3890	3300
	Hardness (as CaCO3) (mg/L)	247	173	2710	2670	2280
	pH (pH)	8.30	8.32	8.00	7.94	7.94
	ORP (mV)	321	104	334	399	444
	Total Suspended Solids (mg/L)	<1.0	<1.0	3.4	3.4	69.2
	Total Dissolved Solids (mg/L)	314 <sup>DLHC</sup>	233 <sup>DLHC</sup>	3880 <sup>DLHC</sup>	4050 <sup>DLHC</sup>	3190 <sup>DLHC</sup>
	Turbidity (NTU)	1.70	<0.10	0.85	0.20	49.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.8	1.1	32.2	33.5	32.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152	150	393	396	398
	Alkalinity, Carbonate (as CaCO3) (mg/L)	2.2	2.8	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	154	153	393	396	398
	Ammonia, Total (as N) (mg/L)	0.0056	0.0547	0.121	0.823 <sup>DLHC</sup>	0.0125 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	<0.50	0.90	<5.0 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.199	0.546	0.32 <sup>DLHC</sup>	0.31 <sup>DLHC</sup>	0.22 <sup>DLHC</sup>
	Ion Balance (%)	95.1	93.8	97.7 <sup>DLHC</sup>	97.4 <sup>DLHC</sup>	96.7 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)	5.73	<0.0050	133 <sup>DLHC</sup>	135 <sup>DLHC</sup>	79.3 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.019 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	0.0106 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	0.073 <sup>TKNI</sup>	<0.10 <sup>DLM</sup>	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	0.0186	0.0034	<0.0010	0.0098
	Phosphorus (P)-Total (mg/L)	0.0021	0.019 <sup>DLM</sup>	0.0035 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>	0.0702 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	84.5	51.1	1840	1810	1620
	Anion Sum (meq/L)	5.26	4.17	55.7	55.1	47.4
	Cation Sum (meq/L)	5.00	3.91	54.4	53.7	45.8
	Cation - Anion Balance (%)	-2.5	-3.2	-1.1	-1.3	-1.7
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.69	1.56 <sup>DTC</sup>
Total Organic Carbon (mg/L)		<0.50	<0.50	0.76	1.03 <sup>DTC</sup>	5.56
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0114	0.0053	<0.0030	<0.0030	0.0327 <sup>DLA</sup>
	Antimony (Sb)-Dissolved (mg/L)	0.00015	<0.00010	0.00035 <sup>DLA</sup>	0.00034 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>
	Barium (Ba)-Dissolved (mg/L)	0.0706	0.210	0.0109 <sup>DLA</sup>	0.00983 <sup>DLA</sup>	0.0140 <sup>DLA</sup>
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>	<0.040 <sup>DLA</sup>
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2317812-1	L2317812-2	L2317812-3	L2317812-4	L2317812-5
					WG	WG	WG	WG	WG
		25-JUL-19	12:45		25-JUL-19	24-JUL-19	25-JUL-19	25-JUL-19	25-JUL-19
					FR_MW-1B_QTR_2019-07-01_N	FR_HMW5_QTR_2019-07-01_N	FR_HMW1D_QTR_2019-07-01_N	FR_HMW1S_QTR_2019-07-01_N	FR_HMW2_QTR_2019-07-01_N
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	<0.010	0.040	0.046	0.044	0.047			
	Cadmium (Cd)-Dissolved (ug/L)	0.0090	<0.0050	0.082	0.117	0.334			
	Calcium (Ca)-Dissolved (mg/L)	62.8	38.6	569 <sup>DLA</sup>	559 <sup>DLA</sup>	476 <sup>DLA</sup>			
	Chromium (Cr)-Dissolved (mg/L)	0.00020	<0.00010	<0.00020	<0.00020	<0.00020			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	4.77	4.33	0.27			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00052			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.013	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	0.062 <sup>DLA</sup>			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>			
	Lithium (Li)-Dissolved (mg/L)	0.0173	0.171	0.0817	0.0842	0.119			
	Magnesium (Mg)-Dissolved (mg/L)	21.8	18.6	313	310	264			
	Manganese (Mn)-Dissolved (mg/L)	0.00025	0.0465	0.582	0.353	0.141			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00100	<0.000050	0.00077	0.00107	0.00059			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0345	0.0430	0.0172			
	Potassium (K)-Dissolved (mg/L)	0.955	0.674	6.65	7.63	7.16			
	Selenium (Se)-Dissolved (ug/L)	18.5	4.95	23.5	213	407			
	Silicon (Si)-Dissolved (mg/L)	2.01	2.62	2.74 <sup>DLA</sup>	2.51 <sup>DLA</sup>	2.13 <sup>DLA</sup>			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020			
	Sodium (Na)-Dissolved (mg/L)	0.956	9.94	2.26	2.20	2.24			
	Strontium (Sr)-Dissolved (mg/L)	0.106	0.373	0.326	0.343	0.284			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020 <sup>DLA</sup>	0.000030 <sup>DLA</sup>	0.000054 <sup>DLA</sup>			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00014	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00124	0.000016	0.0128	0.0128	0.0107 <sup>DLA</sup>			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0032	0.0068	0.0060	0.0087			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

**Additional Comments for Sample Listed:**

Samplenum	Matrix	Report Remarks	Sample Comment:
-----------	--------	----------------	-----------------

**QC Samples with Qualifiers & Comments:**

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2317812-1, -2, -3, -4, -5

**Qualifiers for Individual Parameters Listed:**

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			

## Reference Information

<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-F-ED</b>	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C.			

## Reference Information

The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190725-1337

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4730790							
<b>WG3119112-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.2		%		85-115	29-JUL-19
<b>WG3119112-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	29-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4732211							
<b>WG3120266-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.2		%		85-115	30-JUL-19
<b>WG3120266-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4730940							
<b>WG3118271-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.9		%		80-120	29-JUL-19
<b>WG3118271-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4728609							
<b>WG3117325-6</b>	<b>LCS</b>							
Bromide (Br)			105.8		%		85-115	26-JUL-19
<b>WG3117325-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4728430							
<b>WG3117135-7</b>	<b>DUP</b>	<b>L2317812-3</b>						
Dissolved Organic Carbon		0.69	0.69		mg/L	0.7	20	26-JUL-19
<b>WG3117135-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.0		%		80-120	26-JUL-19
<b>WG3117135-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.7		%		80-120	26-JUL-19
<b>WG3117135-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JUL-19
<b>WG3117135-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JUL-19
<b>WG3117135-8</b>	<b>MS</b>	<b>L2317812-5</b>						
Dissolved Organic Carbon			80.0		%		70-130	26-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							







## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731156</b>							
<b>WG3119367-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.5		%		80-120	30-JUL-19
<b>WG3119367-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JUL-19
<b>WG3119367-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JUL-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4730940</b>							
<b>WG3118271-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.1		%		80-120	29-JUL-19
Antimony (Sb)-Dissolved			101.5		%		80-120	29-JUL-19
Arsenic (As)-Dissolved			103.3		%		80-120	29-JUL-19
Barium (Ba)-Dissolved			100.5		%		80-120	29-JUL-19
Bismuth (Bi)-Dissolved			109.6		%		80-120	29-JUL-19
Boron (B)-Dissolved			91.3		%		80-120	29-JUL-19
Cadmium (Cd)-Dissolved			99.3		%		80-120	29-JUL-19
Calcium (Ca)-Dissolved			98.8		%		80-120	29-JUL-19
Chromium (Cr)-Dissolved			106.6		%		80-120	29-JUL-19
Cobalt (Co)-Dissolved			102.0		%		80-120	29-JUL-19
Copper (Cu)-Dissolved			101.8		%		80-120	29-JUL-19
Iron (Fe)-Dissolved			96.8		%		80-120	29-JUL-19
Lead (Pb)-Dissolved			101.3		%		80-120	29-JUL-19
Lithium (Li)-Dissolved			91.3		%		80-120	29-JUL-19
Magnesium (Mg)-Dissolved			100.3		%		80-120	29-JUL-19
Manganese (Mn)-Dissolved			104.5		%		80-120	29-JUL-19
Molybdenum (Mo)-Dissolved			106.1		%		80-120	29-JUL-19
Nickel (Ni)-Dissolved			103.3		%		80-120	29-JUL-19
Potassium (K)-Dissolved			102.8		%		80-120	29-JUL-19
Selenium (Se)-Dissolved			107.3		%		80-120	29-JUL-19
Silicon (Si)-Dissolved			107.6		%		60-140	29-JUL-19
Silver (Ag)-Dissolved			98.8		%		80-120	29-JUL-19
Sodium (Na)-Dissolved			106.4		%		80-120	29-JUL-19
Strontium (Sr)-Dissolved			105.6		%		80-120	29-JUL-19
Thallium (Tl)-Dissolved			108.6		%		80-120	29-JUL-19
Tin (Sn)-Dissolved			103.1		%		80-120	29-JUL-19
Titanium (Ti)-Dissolved			99.98		%		80-120	29-JUL-19



## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4730940</b>							
<b>WG3118271-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			103.6		%		80-120	29-JUL-19
Vanadium (V)-Dissolved			105.5		%		80-120	29-JUL-19
Zinc (Zn)-Dissolved			99.5		%		80-120	29-JUL-19
<b>WG3118271-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-JUL-19



## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-F-ED</b>								
<b>Water</b>								
Batch R4739275								
WG3123813-22 LCS								
Ammonia, Total (as N)			103.2		%		85-115	03-AUG-19
WG3123813-21 MB								
Ammonia, Total (as N)			<0.0050		mg/L		0.005	03-AUG-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4728609								
WG3117325-6 LCS								
Nitrite (as N)			102.7		%		90-110	26-JUL-19
WG3117325-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	26-JUL-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4728609								
WG3117325-6 LCS								
Nitrate (as N)			100.3		%		90-110	26-JUL-19
WG3117325-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	26-JUL-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4728446								
WG3117101-7 CRM		CL-ORP	226		mV		210-230	26-JUL-19
ORP								
WG3117101-8 DUP		L2317812-3	345	J	mV	10.8	15	26-JUL-19
ORP		334						
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R4728508								
WG3117193-6 LCS								
Phosphorus (P)-Total			113.7		%		80-120	27-JUL-19
WG3117193-5 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-JUL-19
<b>PH-CL</b>								
<b>Water</b>								
Batch R4732211								
WG3120266-2 LCS								
pH			7.03		pH		6.9-7.1	30-JUL-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728478</b>							
<b>WG3116775-3</b>	<b>DUP</b>	<b>L2317812-5</b>						
Orthophosphate-Dissolved (as P)		0.0098	0.0101		mg/L	2.7	20	26-JUL-19
<b>WG3116775-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.2		%		80-120	26-JUL-19
<b>WG3116775-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.7		%		80-120	26-JUL-19
<b>WG3116775-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-JUL-19
<b>WG3116775-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-JUL-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728609</b>							
<b>WG3117325-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	26-JUL-19
<b>WG3117325-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-JUL-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4732372</b>							
<b>WG3119007-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.4		%		85-115	30-JUL-19
<b>WG3119007-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-JUL-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4729103</b>							
<b>WG3117508-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.9		%		75-125	28-JUL-19
<b>WG3117508-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.2		%		75-125	28-JUL-19
<b>WG3117508-26</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	28-JUL-19
<b>WG3117508-30</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.4		%		75-125	28-JUL-19
<b>WG3117508-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-25</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19



## Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4729103							
<b>WG3117508-29 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4733208							
<b>WG3118477-6 LCS</b>								
Total Suspended Solids			97.4		%		85-115	30-JUL-19
<b>WG3118477-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	30-JUL-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4728323							
<b>WG3116815-6 DUP</b>		<b>L2317812-5</b>						
Turbidity		49.3	49.2		NTU	0.2	15	26-JUL-19
<b>WG3116815-5 LCS</b>								
Turbidity			96.0		%		85-115	26-JUL-19
<b>WG3116815-4 MB</b>								
Turbidity			<0.10		NTU		0.1	26-JUL-19

# Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2317812

Report Date: 05-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	25-JUL-19 12:45	26-JUL-19 17:25	0.25	29	hours	EHTR-FM
	2	24-JUL-19 12:45	26-JUL-19 17:25	0.25	53	hours	EHTR-FM
	3	25-JUL-19 10:00	26-JUL-19 17:25	0.25	31	hours	EHTR-FM
	4	25-JUL-19 09:57	26-JUL-19 18:35	0.25	33	hours	EHTR-FM
	5	25-JUL-19 09:00	26-JUL-19 18:35	0.25	34	hours	EHTR-FM
pH							
	1	25-JUL-19 12:45	30-JUL-19 11:00	0.25	118	hours	EHTR-FM
	2	24-JUL-19 12:45	30-JUL-19 11:00	0.25	142	hours	EHTR-FM
	3	25-JUL-19 10:00	30-JUL-19 11:00	0.25	121	hours	EHTR-FM
	4	25-JUL-19 09:57	30-JUL-19 11:00	0.25	121	hours	EHTR-FM
	5	25-JUL-19 09:00	30-JUL-19 11:00	0.25	122	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2317812 were received on 26-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 20190725-1337

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	Excel	PDF	EDD
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.routhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			Email 6:	teckcoal@equionline.com			X
								PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2317812-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	ALS_BrCl-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC							
FR_MW-1R_QTR_2019-07-01_N	FR_MW-1B	WG		2019/07/25	12:45	G	4	1	1	1	1	1							
FR_HMW5_QTR_2019-07-01_N	FR_HMW5	WG		2019/07/24	12:45	G	4	1	1	1	1	1							
FR_JIMWID_QTR_2019-07-01_N	FR_HMWID	WG		2019/07/25	10:00	G	4	1	1	1	1	1							
FR_HMW1S_QTR_2019-07-01_N	FR_HMW1S	WG		2019/07/25	9:57	G	4	1	1	1	1	1							
FR_HMW2_QTR_2019-07-01_N	FR_HMW2	WG		2019/07/25	9:00	G	4	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	July 25, 2019	<i>MS</i>	7/26/19

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Cruz Canlas	250-433-6253
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	July 25, 2019



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 27-JUL-19  
Report Date: 13-AUG-19 09:21 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2318347  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190724-1346  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

13-AUG-19 09:21 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID	L2318347-1 WG 26-JUL-19 12:30 FR_09-02- A_QTR_2019-07- 01_N	L2318347-2 WG 26-JUL-19 12:50 FR_09-02- B_QTR_2019-07- 01_N	L2318347-3 WG 26-JUL-19 12:30 FR_DC1_QTR_201 9-07-01_N	L2318347-4 WG 26-JUL-19 10:50 FR_GCMW- 1B_QTR_2019-07- 01_N	L2318347-5 WG 26-JUL-19 11:18 FR_GCMW- 2_QTR_2019-07- 01_N	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	810	685	811	754	1110
	Hardness (as CaCO3) (mg/L)	435	362	437	80.3	591
	pH (pH)	8.25	8.32	8.28	8.57	8.21
	ORP (mV)	441	430	457	314	483
	Total Suspended Solids (mg/L)	3.8	<1.0	4.0	30.0	1.8
	Total Dissolved Solids (mg/L)	578 <sup>DLHC</sup>	474 <sup>DLHC</sup>	584 <sup>DLHC</sup>	489 <sup>DLHC</sup>	867 <sup>DLHC</sup>
	Turbidity (NTU)	2.19	0.16	2.15	20.7	0.68
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.7	4.7	4.8	<1.0	8.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	248	213	243	381	216
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	4.2	<1.0	17.4	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	248	217	243	398	216
	Ammonia as N (mg/L)	<0.0050	0.0242	0.0096	0.0413	0.0080
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	0.122	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	0.77	0.81	0.86	14.0	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.250	0.257	0.247	1.51	0.26 <sup>DLHC</sup>
	Ion Balance (%)	96.2	95.5	97.6	91.6	94.1
	Nitrate (as N) (mg/L)	12.7	8.56	12.7	0.0082	31.3 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0010	<0.0010	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.462	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0038	0.0024	0.0038	<0.0010	0.0020
	Phosphorus (P)-Total (mg/L)	0.0083	0.0025	0.0094	0.0717	0.0044 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	158	130	158	16.0	300
	Anion Sum (meq/L)	9.18	7.70	9.09	8.76	12.8
	Cation Sum (meq/L)	8.83	7.35	8.87	8.02	12.1
	Cation - Anion Balance (%)	-2.0	-2.3	-1.2	-4.4	-3.1
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.78	<0.50	0.69	6.97	2.31
	Total Organic Carbon (mg/L)	0.93	<0.50	0.71	9.54	2.54
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0068	0.0033
	Antimony (Sb)-Dissolved (mg/L)	0.00027	0.00013	0.00027	0.00014	0.00041
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00253	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.110	0.0983	0.109	0.0960	0.0580
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2318347-6	L2318347-7			
Description	WG	WG			
Sampled Date	26-JUL-19	26-JUL-19			
Sampled Time	09:22	08:23			
Client ID	FR_TBSSMW-1_QTR_2019-07-01_N	FR_TBSSMW-2_QTR_2019-07-01_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	373	357		
	Hardness (as CaCO3) (mg/L)	151	178		
	pH (pH)	8.42	8.29		
	ORP (mV)	319	369		
	Total Suspended Solids (mg/L)	4.2	2.3		
	Total Dissolved Solids (mg/L)	199 <sup>DLHC</sup>	228 <sup>DLHC</sup>		
	Turbidity (NTU)	1.98	0.52		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	1.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	186	131		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.4	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	192	131		
	Ammonia as N (mg/L)	0.345 <sup>DLHC</sup>	0.0150		
	Bromide (Br) (mg/L)	<0.050	<0.050		
	Chloride (Cl) (mg/L)	0.55	<0.50		
	Fluoride (F) (mg/L)	0.377	0.277		
	Ion Balance (%)	88.7	93.4		
	Nitrate (as N) (mg/L)	<0.0050	1.19		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	3.11	0.182		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020	0.0012		
	Phosphorus (P)-Total (mg/L)	0.0065	0.0047		
	Sulfate (SO4) (mg/L)	18.0	55.0		
	Anion Sum (meq/L)	4.24	3.86		
	Cation Sum (meq/L)	3.76	3.61		
	Cation - Anion Balance (%)	-6.0	-3.4		
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.63	<0.50	
Total Organic Carbon (mg/L)		0.88	0.57		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00128	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	2.25	0.0454		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2318347-1	L2318347-2	L2318347-3	L2318347-4	L2318347-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	26-JUL-19	26-JUL-19	26-JUL-19	26-JUL-19	26-JUL-19
		Sampled Time	12:30	12:50	12:30	10:50	11:18
		Client ID	FR_09-02- A_QTR_2019-07- 01_N	FR_09-02- B_QTR_2019-07- 01_N	FR_DC1_QTR_201 9-07-01_N	FR_GCMW- 1B_QTR_2019-07- 01_N	FR_GCMW- 2_QTR_2019-07- 01_N
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.016	0.010	0.017	0.096	0.018
	Cadmium (Cd)-Dissolved (ug/L)		0.0201	0.0137	0.0225	<0.010 <sup>DLM</sup>	0.0412
	Calcium (Ca)-Dissolved (mg/L)		96.7	81.4	99.0	21.9	131
	Chromium (Cr)-Dissolved (mg/L)		0.00014	0.00013	<0.00010	<0.00010	0.00018
	Cobalt (Co)-Dissolved (ug/L)		0.13	0.14	0.13	0.29	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	0.289	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0379	0.0333	0.0372	0.111	0.105
	Magnesium (Mg)-Dissolved (mg/L)		46.9	38.4	46.1	6.22	64.2
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.238	0.00303
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00197	0.00140	0.00195	0.0358	0.00199
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	0.00262	0.00225
	Potassium (K)-Dissolved (mg/L)		2.18	1.92	2.12	1.56	3.25
	Selenium (Se)-Dissolved (ug/L)		49.0	30.6	49.5	0.419	80.6
	Silicon (Si)-Dissolved (mg/L)		1.91	1.77	1.93	4.24	2.17
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.02	1.84	1.99	146	3.80
	Strontium (Sr)-Dissolved (mg/L)		0.138	0.121	0.139	0.175	0.206
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00377	0.00284	0.00374	0.00150	0.00579
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	0.0018

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2318347-6	L2318347-7		
		Description	WG	WG		
		Sampled Date	26-JUL-19	26-JUL-19		
		Sampled Time	09:22	08:23		
		Client ID	FR_TBSSMW-1_QTR_2019-07-01_N	FR_TBSSMW-2_QTR_2019-07-01_N		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.018	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0074			
	Calcium (Ca)-Dissolved (mg/L)	14.0	44.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00015			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.255	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.175	0.0063			
	Magnesium (Mg)-Dissolved (mg/L)	28.1	16.6			
	Manganese (Mn)-Dissolved (mg/L)	0.0418	0.00018			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0124	0.000857			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050			
	Potassium (K)-Dissolved (mg/L)	6.82	0.695			
	Selenium (Se)-Dissolved (ug/L)	<0.050	8.28			
	Silicon (Si)-Dissolved (mg/L)	2.35	1.63			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	12.8	0.534			
	Strontium (Sr)-Dissolved (mg/L)	0.230	0.0756			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000238	0.000758			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP	Samples Received with temperature >15 Degrees C - Samples received at 16 degrees.

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nitrate (as N)	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulfate (SO4)	MS-B	L2318347-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).



## Reference Information

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190724-1346

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 1 of 13

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4732295							
<b>WG3120260-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.6		%		85-115	30-JUL-19
<b>WG3120260-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.4		%		85-115	30-JUL-19
<b>WG3120260-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	30-JUL-19
<b>WG3120260-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	30-JUL-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4732211							
<b>WG3120266-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.3		%		85-115	30-JUL-19
<b>WG3120266-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	30-JUL-19
<b>WG3120266-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JUL-19
<b>WG3120266-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JUL-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4733969							
<b>WG3120507-3</b>	<b>DUP</b>	<b>L2318347-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3120507-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.1		%		80-120	01-AUG-19
<b>WG3120507-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-AUG-19
<b>WG3120507-4</b>	<b>MS</b>	<b>L2318347-1</b>						
Beryllium (Be)-Dissolved			86.6		%		70-130	01-AUG-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4728744							
<b>WG3117509-7</b>	<b>DUP</b>	<b>L2318347-5</b>						
Bromide (Br)		<0.25	<0.050	RPD-NA	mg/L	N/A	20	27-JUL-19
<b>WG3117509-2</b>	<b>LCS</b>							
Bromide (Br)			102.0		%		85-115	27-JUL-19
<b>WG3117509-6</b>	<b>LCS</b>							
Bromide (Br)			102.3		%		85-115	27-JUL-19
<b>WG3117509-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-JUL-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-JUL-19
<b>WG3117509-8</b>	<b>MS</b>	<b>L2318347-5</b>						
Bromide (Br)			106.6		%		75-125	27-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728757</b>							
<b>WG3117445-7</b>	<b>DUP</b>	<b>L2318347-4</b>						
Dissolved Organic Carbon		6.97	7.01		mg/L	0.7	20	27-JUL-19
<b>WG3117445-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.3		%		80-120	27-JUL-19
<b>WG3117445-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.2		%		80-120	27-JUL-19
<b>WG3117445-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117445-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117445-8</b>	<b>MS</b>	<b>L2318347-7</b>						
Dissolved Organic Carbon			97.4		%		70-130	27-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728757</b>							
<b>WG3117445-7</b>	<b>DUP</b>	<b>L2318347-4</b>						
Total Organic Carbon		9.54	10.1		mg/L	5.5	20	27-JUL-19
<b>WG3117445-2</b>	<b>LCS</b>							
Total Organic Carbon			101.4		%		80-120	27-JUL-19
<b>WG3117445-6</b>	<b>LCS</b>							
Total Organic Carbon			108.3		%		80-120	27-JUL-19
<b>WG3117445-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117445-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117445-8</b>	<b>MS</b>	<b>L2318347-7</b>						
Total Organic Carbon			95.6		%		70-130	27-JUL-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-7</b>	<b>DUP</b>	<b>L2318347-5</b>						
Chloride (Cl)		<2.5	0.79	J	mg/L	0.61	5	27-JUL-19
<b>WG3117509-2</b>	<b>LCS</b>							
Chloride (Cl)			100.1		%		90-110	27-JUL-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-6</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		90-110	27-JUL-19
<b>WG3117509-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117509-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-JUL-19
<b>WG3117509-8</b>	<b>MS</b>	<b>L2318347-5</b>						
Chloride (Cl)			101.3		%		75-125	27-JUL-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4732211</b>							
<b>WG3120266-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.6		%		90-110	30-JUL-19
<b>WG3120266-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.4		%		90-110	30-JUL-19
<b>WG3120266-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JUL-19
<b>WG3120266-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JUL-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-7</b>	<b>DUP</b>	<b>L2318347-5</b>						
Fluoride (F)		0.26	0.230		mg/L	13	20	27-JUL-19
<b>WG3117509-2</b>	<b>LCS</b>							
Fluoride (F)			104.3		%		90-110	27-JUL-19
<b>WG3117509-6</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	27-JUL-19
<b>WG3117509-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-JUL-19
<b>WG3117509-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-JUL-19
<b>WG3117509-8</b>	<b>MS</b>	<b>L2318347-5</b>						
Fluoride (F)			92.9		%		75-125	27-JUL-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739056</b>							
<b>WG3121863-18</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.1		%		80-120	03-AUG-19
<b>WG3121863-17</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-AUG-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4733969</b>							
<b>WG3120507-3</b>	<b>DUP</b>	<b>L2318347-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-AUG-19
Antimony (Sb)-Dissolved		0.00013	0.00013		mg/L	4.8	20	01-AUG-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-19
Barium (Ba)-Dissolved		0.0983	0.0995		mg/L	1.3	20	01-AUG-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-AUG-19
Boron (B)-Dissolved		0.010	0.010		mg/L	1.5	20	01-AUG-19
Cadmium (Cd)-Dissolved		0.0000137	0.0000157		mg/L	13	20	01-AUG-19
Calcium (Ca)-Dissolved		81.4	80.4		mg/L	1.2	20	01-AUG-19
Chromium (Cr)-Dissolved		0.00013	0.00014		mg/L	3.4	20	01-AUG-19
Cobalt (Co)-Dissolved		0.00014	0.00014		mg/L	1.2	20	01-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-AUG-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-AUG-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-AUG-19
Lithium (Li)-Dissolved		0.0333	0.0331		mg/L	0.7	20	01-AUG-19
Magnesium (Mg)-Dissolved		38.4	37.7		mg/L	2.0	20	01-AUG-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-19
Molybdenum (Mo)-Dissolved		0.00140	0.00139		mg/L	0.6	20	01-AUG-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-AUG-19
Potassium (K)-Dissolved		1.92	1.93		mg/L	0.7	20	01-AUG-19
Selenium (Se)-Dissolved		0.0306	0.0316		mg/L	3.4	20	01-AUG-19
Silicon (Si)-Dissolved		1.77	1.84		mg/L	3.7	20	01-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-AUG-19
Sodium (Na)-Dissolved		1.84	1.83		mg/L	0.6	20	01-AUG-19
Strontium (Sr)-Dissolved		0.121	0.120		mg/L	0.8	20	01-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-AUG-19
Uranium (U)-Dissolved		0.00284	0.00289		mg/L	1.9	20	01-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-AUG-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3120507-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.4		%		80-120	01-AUG-19
Antimony (Sb)-Dissolved			95.3		%		80-120	01-AUG-19
Arsenic (As)-Dissolved			98.7		%		80-120	01-AUG-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4733969</b>							
<b>WG3120507-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			99.1		%		80-120	01-AUG-19
Bismuth (Bi)-Dissolved			89.9		%		80-120	01-AUG-19
Boron (B)-Dissolved			99.9		%		80-120	01-AUG-19
Cadmium (Cd)-Dissolved			96.0		%		80-120	01-AUG-19
Calcium (Ca)-Dissolved			95.8		%		80-120	01-AUG-19
Chromium (Cr)-Dissolved			100.2		%		80-120	01-AUG-19
Cobalt (Co)-Dissolved			96.8		%		80-120	01-AUG-19
Copper (Cu)-Dissolved			96.2		%		80-120	01-AUG-19
Iron (Fe)-Dissolved			96.7		%		80-120	01-AUG-19
Lead (Pb)-Dissolved			94.0		%		80-120	01-AUG-19
Lithium (Li)-Dissolved			95.0		%		80-120	01-AUG-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	01-AUG-19
Manganese (Mn)-Dissolved			102.4		%		80-120	01-AUG-19
Molybdenum (Mo)-Dissolved			96.6		%		80-120	01-AUG-19
Nickel (Ni)-Dissolved			97.1		%		80-120	01-AUG-19
Potassium (K)-Dissolved			103.5		%		80-120	01-AUG-19
Selenium (Se)-Dissolved			97.3		%		80-120	01-AUG-19
Silicon (Si)-Dissolved			110.0		%		60-140	01-AUG-19
Silver (Ag)-Dissolved			93.4		%		80-120	01-AUG-19
Sodium (Na)-Dissolved			103.8		%		80-120	01-AUG-19
Strontium (Sr)-Dissolved			98.4		%		80-120	01-AUG-19
Thallium (Tl)-Dissolved			94.9		%		80-120	01-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	01-AUG-19
Titanium (Ti)-Dissolved			99.6		%		80-120	01-AUG-19
Uranium (U)-Dissolved			100.7		%		80-120	01-AUG-19
Vanadium (V)-Dissolved			100.2		%		80-120	01-AUG-19
Zinc (Zn)-Dissolved			96.8		%		80-120	01-AUG-19
<b>WG3120507-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-AUG-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4733969</b>							
<b>WG3120507-1</b>	<b>MB</b>	<b>NP</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
<b>WG3120507-4</b>	<b>MS</b>	<b>L2318347-1</b>						
Aluminum (Al)-Dissolved			95.3		%		70-130	01-AUG-19
Antimony (Sb)-Dissolved			96.1		%		70-130	01-AUG-19
Arsenic (As)-Dissolved			103.1		%		70-130	01-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Bismuth (Bi)-Dissolved			87.2		%		70-130	01-AUG-19
Boron (B)-Dissolved			94.2		%		70-130	01-AUG-19
Cadmium (Cd)-Dissolved			97.6		%		70-130	01-AUG-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Chromium (Cr)-Dissolved			98.2		%		70-130	01-AUG-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4733969</b>							
<b>WG3120507-4</b>	<b>MS</b>	<b>L2318347-1</b>						
Cobalt (Co)-Dissolved			95.1		%		70-130	01-AUG-19
Copper (Cu)-Dissolved			91.7		%		70-130	01-AUG-19
Iron (Fe)-Dissolved			93.7		%		70-130	01-AUG-19
Lead (Pb)-Dissolved			91.0		%		70-130	01-AUG-19
Lithium (Li)-Dissolved			82.1		%		70-130	01-AUG-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Manganese (Mn)-Dissolved			99.2		%		70-130	01-AUG-19
Molybdenum (Mo)-Dissolved			91.8		%		70-130	01-AUG-19
Nickel (Ni)-Dissolved			92.3		%		70-130	01-AUG-19
Potassium (K)-Dissolved			99.6		%		70-130	01-AUG-19
Selenium (Se)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Silicon (Si)-Dissolved			92.0		%		70-130	01-AUG-19
Silver (Ag)-Dissolved			96.3		%		70-130	01-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	01-AUG-19
Thallium (Tl)-Dissolved			93.4		%		70-130	01-AUG-19
Tin (Sn)-Dissolved			97.4		%		70-130	01-AUG-19
Titanium (Ti)-Dissolved			96.4		%		70-130	01-AUG-19
Uranium (U)-Dissolved			95.4		%		70-130	01-AUG-19
Vanadium (V)-Dissolved			101.3		%		70-130	01-AUG-19
Zinc (Zn)-Dissolved			98.6		%		70-130	01-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4740232</b>							
<b>WG3124940-3</b>	<b>DUP</b>	<b>L2318347-7</b>						
Ammonia as N		0.0150	0.0164		mg/L	8.9	20	06-AUG-19
<b>WG3124940-2</b>	<b>LCS</b>							
Ammonia as N			91.2		%		85-115	06-AUG-19
<b>WG3124940-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-AUG-19
<b>WG3124940-4</b>	<b>MS</b>	<b>L2318347-7</b>						
Ammonia as N			93.9		%		75-125	06-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-7</b>	<b>DUP</b>	<b>L2318347-5</b>						
Nitrite (as N)		<0.0050	0.0011	J	mg/L	0.0008	0.01	27-JUL-19
<b>WG3117509-2</b>	<b>LCS</b>							
Nitrite (as N)			102.3		%		90-110	27-JUL-19
<b>WG3117509-6</b>	<b>LCS</b>							
Nitrite (as N)			102.9		%		90-110	27-JUL-19
<b>WG3117509-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-JUL-19
<b>WG3117509-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-JUL-19
<b>WG3117509-8</b>	<b>MS</b>	<b>L2318347-5</b>						
Nitrite (as N)			104.1		%		75-125	27-JUL-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4728744</b>							
<b>WG3117509-7</b>	<b>DUP</b>	<b>L2318347-5</b>						
Nitrate (as N)		31.3	30.0		mg/L	4.1	20	27-JUL-19
<b>WG3117509-2</b>	<b>LCS</b>							
Nitrate (as N)			100.4		%		90-110	27-JUL-19
<b>WG3117509-6</b>	<b>LCS</b>							
Nitrate (as N)			100.4		%		90-110	27-JUL-19
<b>WG3117509-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-JUL-19
<b>WG3117509-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-JUL-19
<b>WG3117509-8</b>	<b>MS</b>	<b>L2318347-5</b>						
Nitrate (as N)			N/A	MS-B	%		-	27-JUL-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4730492</b>							
<b>WG3118116-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	29-JUL-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731143</b>							
<b>WG3119184-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.1		%		80-120	30-JUL-19
<b>WG3119184-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-JUL-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4732211							
WG3120266-11	LCS							
pH			7.03		pH		6.9-7.1	30-JUL-19
WG3120266-8	LCS							
pH			7.03		pH		6.9-7.1	30-JUL-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4728644							
WG3117284-6	LCS							
Orthophosphate-Dissolved (as P)			101.5		%		80-120	27-JUL-19
WG3117284-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-JUL-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4728744							
WG3117509-7	DUP	L2318347-5						
Sulfate (SO4)		300	291		mg/L	3.3	20	27-JUL-19
WG3117509-2	LCS							
Sulfate (SO4)			100.5		%		90-110	27-JUL-19
WG3117509-6	LCS							
Sulfate (SO4)			100.6		%		90-110	27-JUL-19
WG3117509-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-JUL-19
WG3117509-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-JUL-19
WG3117509-8	MS	L2318347-5						
Sulfate (SO4)			N/A	MS-B	%		-	27-JUL-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4732372							
WG3119007-9	DUP	L2318347-4						
Total Dissolved Solids		489	490		mg/L	0.2	20	30-JUL-19
WG3119007-8	LCS							
Total Dissolved Solids			103.9		%		85-115	30-JUL-19
WG3119007-7	MB							
Total Dissolved Solids			<10		mg/L		10	30-JUL-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4729103							
WG3117508-31	DUP	L2318347-7						
Total Kjeldahl Nitrogen		0.182	0.159		mg/L	14	20	29-JUL-19
WG3117508-18	LCS							



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4729103</b>							
<b>WG3117508-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.9		%		75-125	28-JUL-19
<b>WG3117508-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.2		%		75-125	28-JUL-19
<b>WG3117508-26</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	28-JUL-19
<b>WG3117508-30</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.4		%		75-125	28-JUL-19
<b>WG3117508-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-25</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-29</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JUL-19
<b>WG3117508-32</b>	<b>MS</b>	<b>L2318347-7</b>						
Total Kjeldahl Nitrogen			93.7		%		70-130	29-JUL-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4733612</b>							
<b>WG3120248-4</b>	<b>LCS</b>							
Total Suspended Solids			94.9		%		85-115	31-JUL-19
<b>WG3120248-6</b>	<b>LCS</b>							
Total Suspended Solids			92.9		%		85-115	31-JUL-19
<b>WG3120248-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-JUL-19
<b>WG3120248-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-JUL-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4728654</b>							
<b>WG3117285-3</b>	<b>DUP</b>	<b>L2318347-3</b>						
Turbidity		2.15	2.16		NTU	0.5	15	27-JUL-19
<b>WG3117285-2</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	27-JUL-19
<b>WG3117285-5</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	27-JUL-19
<b>WG3117285-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-JUL-19



## Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4728654							
WG3117285-4	MB							
Turbidity			<0.10		NTU		0.1	27-JUL-19

# Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2318347

Report Date: 13-AUG-19

Page 13 of 13

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	26-JUL-19 12:30	29-JUL-19 08:00	0.25	67	hours	EHTR-FM
	2	26-JUL-19 12:50	29-JUL-19 08:00	0.25	67	hours	EHTR-FM
	3	26-JUL-19 12:30	29-JUL-19 08:00	0.25	67	hours	EHTR-FM
	4	26-JUL-19 10:50	29-JUL-19 08:00	0.25	69	hours	EHTR-FM
	5	26-JUL-19 11:18	29-JUL-19 08:00	0.25	69	hours	EHTR-FM
	6	26-JUL-19 09:22	29-JUL-19 08:00	0.25	71	hours	EHTR-FM
	7	26-JUL-19 08:23	29-JUL-19 08:00	0.25	72	hours	EHTR-FM
pH							
	1	26-JUL-19 12:30	30-JUL-19 11:00	0.25	95	hours	EHTR-FM
	2	26-JUL-19 12:50	30-JUL-19 11:00	0.25	94	hours	EHTR-FM
	3	26-JUL-19 12:30	30-JUL-19 11:00	0.25	95	hours	EHTR-FM
	4	26-JUL-19 10:50	30-JUL-19 11:00	0.25	96	hours	EHTR-FM
	5	26-JUL-19 11:18	30-JUL-19 11:00	0.25	96	hours	EHTR-FM
	6	26-JUL-19 09:22	30-JUL-19 11:00	0.25	98	hours	EHTR-FM
	7	26-JUL-19 08:23	30-JUL-19 11:00	0.25	99	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

**Notes\*:**

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2318347 were received on 27-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20190724-1346

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	noil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2559 29 Street NE			Email 3:				
								Email 4:	jarod.cavenna@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	scott.roughhead@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	teckcorp@equisonline.com			X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - P: Field, L: Lab, F: Field & Lab, N: None



L2318347-COFC

Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PH.	N	Y	Y	Y	N							
								ANALYSIS												
								ALS_Package-TKN/TOC	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
FR_09-02-A_QTR_2019-07-01_N	FR_09-02-A	WG		2019/07/26	12:30	G	5		1	1	1	1	1							
FR_09-02-B_QTR_2019-07-01_N	FR_09-02-B	WG		2019/07/26	12:50	G	5		1	1	1	1	1							
FR_DC1_QTR_2019-07-01_N	FR_DC1	WG		2019/07/26	12:30	G	5		1	1	1	1	1							
FR_GCMW-1B_QTR_2019-07-01_N	FR_GCMW-1B	WG		2019/07/26	10:50	G	5		1	1	1	1	1							
FR_GCMW-2_QTR_2019-07-01_N	FR_GCMW	WG		2019/07/26	11:18	G	5		1	1	1	1	1							
FR_TBSSMW-1_QTR_2019-07-01_N	FR_TBSSMW-1	WG		2019/07/26	09:22	G	5		1	1	1	1	1							
FR_TBSSMW-2_QTR_2019-07-01_N	FR_TBSSMW-2	WG		2019/07/26	08:23	G	5		1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	Cruz Canlas	July 26, 2019	<i>[Signature]</i>	07/27 9:00
				160

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X	Sampler's Name	Cruz Canlas	Mobile #	250-433-6253
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	July 26, 2019
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 30-JUL-19  
Report Date: 15-AUG-19 12:13 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2318940  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190729-1437  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2318940-1	L2318940-2	L2318940-3	L2318940-4	L2318940-5
					WG	WG	WG	WG	WG
		29-JUL-19	10:33	FR_09-01-A_QTR_2019-07-01_N	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19
					10:33	10:30	13:45	13:47	12:53
					FR_09-01-A_QTR_2019-07-01_N	FR_09-01-B_QTR_2019-07-01_N	FR_09-04-A_QTR_2019-07-01_N	FR_09-04-B_QTR_2019-07-01_N	FR_DC2_QTR_2019-07-01_N
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1150	1010	1330	1330	1210			
	Hardness (as CaCO3) (mg/L)	622	565	766	796	690			
	pH (pH)	8.27	8.20	8.30	8.23	8.32			
	ORP (mV)	224	287	395	399	430			
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	832 <sup>DLHC</sup>	747 <sup>DLHC</sup>	1010 <sup>DLHC</sup>	964 <sup>DLHC</sup>	917 <sup>DLHC</sup>			
	Turbidity (NTU)	0.16	0.23	0.29	0.17	0.11			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.9	<1.0	5.1	5.9	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	322	270	351	357	332			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	6.2	<1.0	6.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	322	270	357	357	338			
	Ammonia as N (mg/L)	<0.0050 <sup>DLHC</sup>	0.0169 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0059 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>			
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	6.5 <sup>DLHC</sup>	6.8 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.24 <sup>DLHC</sup>	0.21 <sup>DLHC</sup>	0.36 <sup>DLHC</sup>	0.34 <sup>DLHC</sup>	0.24 <sup>DLHC</sup>			
	Ion Balance (%)	100 <sup>DLHC</sup>	105 <sup>DLHC</sup>	99.7 <sup>DLHC</sup>	99.8 <sup>DLHC</sup>	97.2 <sup>DLHC</sup>			
	Nitrate (as N) (mg/L)	23.5 <sup>DLHC</sup>	19.3 <sup>DLHC</sup>	3.29 <sup>DLHC</sup>	3.29 <sup>DLHC</sup>	28.7 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0058 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>	<0.050 <sup>RRV</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0036 <sup>RRV</sup>	0.0029 <sup>RRV</sup>	0.0039 <sup>RRV</sup>	0.0031 <sup>RRV</sup>	0.0040 <sup>RRV</sup>			
	Phosphorus (P)-Total (mg/L)	0.0027 <sup>DLHC</sup>	0.0028 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>	0.0034 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	215	201	397	426	268			
	Anion Sum (meq/L)	12.6	11.0	15.9	16.5	14.4			
	Cation Sum (meq/L)	12.6	11.5	15.8	16.4	14.0			
	Cation - Anion Balance (%)	0.1	2.2	-0.2	-0.1	-1.4			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.71	0.76	0.78	0.60	0.75		
Total Organic Carbon (mg/L)		0.75	0.76	0.84	1.24	0.78			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)								
	Antimony (Sb)-Total (mg/L)								
	Arsenic (As)-Total (mg/L)								
	Barium (Ba)-Total (mg/L)								
	Beryllium (Be)-Total (ug/L)								
	Bismuth (Bi)-Total (mg/L)								
	Boron (B)-Total (mg/L)								
	Cadmium (Cd)-Total (ug/L)								

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2318940-6	L2318940-7	L2318940-8	L2318940-9	L2318940-10
		Description	WG	WG	WG	WG	WG
		Sampled Date	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19
		Sampled Time	12:00	12:53	12:31	14:00	08:00
		Client ID	FR_FLD_QTR_201 9-07-01_N	FR_MW- SK1A_QTR_2019- 07-01_N	FR_MW- SK1B_QTR_2019- 07-01_N	FR_CASW5A_WS _2019-07-27_NP	FR_POTABLE_WP _2019-07-29_N
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0	1200	852	230		
	Hardness (as CaCO3) (mg/L)	<0.50	666	448	115		185 <sup>HTC</sup>
	pH (pH)	6.06	8.28	8.27	8.38		
	ORP (mV)	459	436	222	431		
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	12.1		
	Total Dissolved Solids (mg/L)	<10	878 <sup>DLHC</sup>	588 <sup>DLHC</sup>	121 <sup>DLHC</sup>		
	Turbidity (NTU)	<0.10	0.23	1.04	3.34		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.9	1.1	1.2	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	320	248	110		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	3.8		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	320	248	114		
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0151	<0.0050		
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>	<0.050	<0.050		<0.050
	Chloride (Cl) (mg/L)	<0.50	<2.5 <sup>DLHC</sup>	4.63	<0.50		<0.50
	Fluoride (F) (mg/L)	<0.020	0.20 <sup>DLHC</sup>	0.145	0.080		0.224
	Ion Balance (%)	0.0	100	98.2	99.8		
	Nitrate (as N) (mg/L)	<0.0050	26.8 <sup>DLHC</sup>	2.11	<0.0050		1.02
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	0.0099	<0.0010		0.0013
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.166	0.064			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010 <sup>RRV</sup>	0.0042 <sup>RRV</sup>	<0.0010 <sup>RRV</sup>	0.0177 <sup>RRV</sup>		
	Phosphorus (P)-Total (mg/L)	<0.0020 <sup>RRV</sup>	0.0030 <sup>RRV</sup>	<0.0020 <sup>RRV</sup>	0.021 <sup>DLM</sup>		
	Sulfate (SO4) (mg/L)	<0.30	246 <sup>DLHC</sup>	198	3.15		50.6
	Anion Sum (meq/L)	<0.10	13.4	9.36	2.35		
	Cation Sum (meq/L)	<0.10	13.5	9.19	2.35		
	Cation - Anion Balance (%)	0.0	0.2	-0.9	-0.1		
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.52	0.95		
Total Organic Carbon (mg/L)		<0.50	0.69	1.13			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)				0.118		0.145
	Antimony (Sb)-Total (mg/L)				0.00014		<0.00010
	Arsenic (As)-Total (mg/L)				0.00022		<0.00010
	Barium (Ba)-Total (mg/L)				0.0901		0.0469
	Beryllium (Be)-Total (ug/L)				<0.020		<0.020
	Bismuth (Bi)-Total (mg/L)				<0.000050		<0.000050
	Boron (B)-Total (mg/L)				<0.010		<0.010
	Cadmium (Cd)-Total (ug/L)				0.0423		0.0077

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2318940-1	L2318940-2	L2318940-3	L2318940-4	L2318940-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19
		Sampled Time	10:33	10:30	13:45	13:47	12:53
		Client ID	FR_09-01-A_QTR_2019-07-01_N	FR_09-01-B_QTR_2019-07-01_N	FR_09-04-A_QTR_2019-07-01_N	FR_09-04-B_QTR_2019-07-01_N	FR_DC2_QTR_2019-07-01_N
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)						
	Chromium (Cr)-Total (mg/L)						
	Cobalt (Co)-Total (ug/L)						
	Copper (Cu)-Total (mg/L)						
	Iron (Fe)-Total (mg/L)						
	Lead (Pb)-Total (mg/L)						
	Lithium (Li)-Total (mg/L)						
	Magnesium (Mg)-Total (mg/L)						
	Manganese (Mn)-Total (mg/L)						
	Mercury (Hg)-Total (mg/L)						
	Molybdenum (Mo)-Total (mg/L)						
	Nickel (Ni)-Total (mg/L)						
	Potassium (K)-Total (mg/L)						
	Selenium (Se)-Total (ug/L)						
	Silicon (Si)-Total (mg/L)						
	Silver (Ag)-Total (mg/L)						
	Sodium (Na)-Total (mg/L)						
	Strontium (Sr)-Total (mg/L)						
	Thallium (Tl)-Total (mg/L)						
	Tin (Sn)-Total (mg/L)						
	Titanium (Ti)-Total (mg/L)						
	Uranium (U)-Total (mg/L)						
	Vanadium (V)-Total (mg/L)						
	Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00040	0.00014	0.00012	0.00012	0.00012	0.00033
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0680	0.103	0.110	0.110	0.110	0.0624
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.020	0.013	0.033	0.033	0.033	0.019
	Cadmium (Cd)-Dissolved (ug/L)	0.0284	0.0153	1.11	1.16	1.16	0.0254
	Calcium (Ca)-Dissolved (mg/L)	139	130	163	163	163	159
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.11	0.17	1.39	1.43	1.43	0.12

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2318940-6 WG 29-JUL-19 12:00 FR_FLD_QTR_201 9-07-01_N	L2318940-7 WG 29-JUL-19 12:53 FR_MW- SK1A_QTR_2019- 07-01_N	L2318940-8 WG 29-JUL-19 12:31 FR_MW- SK1B_QTR_2019- 07-01_N	L2318940-9 WG 29-JUL-19 14:00 FR_CASW5A_WS _2019-07-27_NP	L2318940-10 WG 29-JUL-19 08:00 FR_POTABLE_WP _2019-07-29_N
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)				29.3	49.3
	Chromium (Cr)-Total (mg/L)				0.00023	0.00012
	Cobalt (Co)-Total (ug/L)				0.12	<0.10
	Copper (Cu)-Total (mg/L)				0.00061	0.240
	Iron (Fe)-Total (mg/L)				0.149	0.050
	Lead (Pb)-Total (mg/L)				0.000143	0.000463
	Lithium (Li)-Total (mg/L)				0.0050	0.0043
	Magnesium (Mg)-Total (mg/L)				10.6	15.0
	Manganese (Mn)-Total (mg/L)				0.00385	0.00295
	Mercury (Hg)-Total (mg/L)					<0.0000050
	Molybdenum (Mo)-Total (mg/L)				0.000618	0.000701
	Nickel (Ni)-Total (mg/L)				0.00074	0.00053
	Potassium (K)-Total (mg/L)				0.642	0.575
	Selenium (Se)-Total (ug/L)				0.932	7.37
	Silicon (Si)-Total (mg/L)				2.61	1.65
	Silver (Ag)-Total (mg/L)				<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)				0.613	0.576
	Strontium (Sr)-Total (mg/L)				0.0341	0.0870
	Thallium (Tl)-Total (mg/L)				<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)				<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)				<0.010	<0.010
	Uranium (U)-Total (mg/L)				0.000165	0.000698
	Vanadium (V)-Total (mg/L)				0.00110	<0.00050
	Zinc (Zn)-Total (mg/L)				<0.0030	0.0788
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	LAB	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	0.0056	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00035	0.00015	0.00012	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	0.00021	0.00019	
	Barium (Ba)-Dissolved (mg/L)	<0.00010	0.0607	0.0544	0.0897	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.020	0.015	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0254	0.0135	0.0235	
	Calcium (Ca)-Dissolved (mg/L)	<0.050	153	116	30.1	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.13	0.31	<0.10	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2318940-1	L2318940-2	L2318940-3	L2318940-4	L2318940-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19	29-JUL-19
		Sampled Time	10:33	10:30	13:45	13:47	12:53
		Client ID	FR_09-01- A_QTR_2019-07- 01_N	FR_09-01- B_QTR_2019-07- 01_N	FR_09-04- A_QTR_2019-07- 01_N	FR_09-04- B_QTR_2019-07- 01_N	FR_DC2_QTR_201 9-07-01_N
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0520	0.0506	0.0910	0.0929	0.0517
	Magnesium (Mg)-Dissolved (mg/L)		66.6	58.7	87.3	94.7	71.0
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	1.52	1.54	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00220	0.00120	0.00196	0.00181	0.00163
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	0.00815	0.00878	<0.00050
	Potassium (K)-Dissolved (mg/L)		3.01	2.74	5.84	5.96	3.10
	Selenium (Se)-Dissolved (ug/L)		102	83.2	3.57	3.62	112
	Silicon (Si)-Dissolved (mg/L)		1.94	2.16	2.99	3.02	2.19
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.53	2.40	6.66	7.04	2.85
	Strontium (Sr)-Dissolved (mg/L)		0.160	0.165	0.253	0.247	0.154
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000060	0.000061	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00636	0.00508	0.00709	0.00664	0.00579
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	0.0044	0.0049	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2318940-6	L2318940-7	L2318940-8	L2318940-9	L2318940-10
					L2318940-6 WG 29-JUL-19 12:00 FR_FLD_QTR_201 9-07-01_N	L2318940-7 WG 29-JUL-19 12:53 FR_MW- SK1A_QTR_2019- 07-01_N	L2318940-8 WG 29-JUL-19 12:31 FR_MW- SK1B_QTR_2019- 07-01_N	L2318940-9 WG 29-JUL-19 14:00 FR_CASW5A_WS _2019-07-27_NP	L2318940-10 WG 29-JUL-19 08:00 FR_POTABLE_WP _2019-07-29_N
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.00136	<0.00050	<0.00050				
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.097	<0.010				
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000060	<0.000050	<0.000050				
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0508	0.0103	0.0054				
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	69.2	38.3	9.74				
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010	0.287	0.00048				
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050					
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.00167	0.000539	0.000613				
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00119	<0.00050				
	Potassium (K)-Dissolved (mg/L)	<0.050	3.03	1.03	0.584				
	Selenium (Se)-Dissolved (ug/L)	<0.050	112	3.23	0.932				
	Silicon (Si)-Dissolved (mg/L)	<0.050	2.20	3.86	2.42				
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010				
	Sodium (Na)-Dissolved (mg/L)	<0.050	2.75	4.44	0.637				
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.149	0.239	0.0357				
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000014	<0.000010				
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010				
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00566	0.00230	0.000149				
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00053				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0015	0.0014	<0.0010				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Total	B	L2318940-10, -9
Method Blank	Molybdenum (Mo)-Total	MB-LOR	L2318940-9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2318940-9
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2318940-9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2318940-9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2318940-9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Total	MS-B	L2318940-10, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L2318940-9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2318940-10, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2318940-9
Matrix Spike	Copper (Cu)-Total	MS-B	L2318940-10, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2318940-10, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2318940-9
Matrix Spike	Manganese (Mn)-Total	MS-B	L2318940-9
Matrix Spike	Sodium (Na)-Total	MS-B	L2318940-9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2318940-10, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2318940-9
Matrix Spike	Phosphorus (P)-Total	MS-B	L2318940-1, -2, -3, -4, -5, -6, -7, -8, -9

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
		This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.	
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

**BE-D-L-CCMS-VA** Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

**BE-T-L-CCMS-VA** Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

**BR-L-IC-N-CL** Water Bromide in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**C-DIS-ORG-LOW-CL** Water Dissolved Organic Carbon APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]



## Reference Information

<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

## Reference Information

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

---

20190729-1437

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 1 of 20

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734693</b>							
<b>WG3121475-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.0		%		85-115	31-JUL-19
<b>WG3121475-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	31-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734715</b>							
<b>WG3121491-6</b>	<b>DUP</b>	<b>L2318940-9</b>						
Alkalinity, Total (as CaCO3)		114	116		mg/L	1.7	20	31-JUL-19
<b>WG3121491-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	31-JUL-19
<b>WG3121491-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	31-JUL-19
<b>WG3121491-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-JUL-19
<b>WG3121491-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736428</b>							
<b>WG3121001-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.2		%		80-120	01-AUG-19
<b>WG3121001-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-AUG-19
<b>Batch</b>	<b>R4736928</b>							
<b>WG3121573-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.1		%		80-120	01-AUG-19
<b>WG3121573-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-3</b>	<b>DUP</b>	<b>L2318940-9</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3120913-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			89.5		%		80-120	01-AUG-19
<b>WG3120913-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-AUG-19
<b>WG3120913-4</b>	<b>MS</b>	<b>L2318940-10</b>						
Beryllium (Be)-Total			90.4		%		70-130	01-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 2 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Bromide (Br)			103.5		%		85-115	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Bromide (Br)			92.2		%		75-125	30-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731488</b>							
<b>WG3120219-3</b>	<b>DUP</b>	<b>L2318940-7</b>						
Dissolved Organic Carbon		0.52	<0.50	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120219-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.9		%		80-120	30-JUL-19
<b>WG3120219-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-JUL-19
<b>WG3120219-4</b>	<b>MS</b>	<b>L2318940-8</b>						
Dissolved Organic Carbon			93.4		%		70-130	30-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731488</b>							
<b>WG3120219-3</b>	<b>DUP</b>	<b>L2318940-7</b>						
Total Organic Carbon		0.69	0.76		mg/L	10	20	30-JUL-19
<b>WG3120219-2</b>	<b>LCS</b>							
Total Organic Carbon			118.7		%		80-120	30-JUL-19
<b>WG3120219-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-JUL-19
<b>WG3120219-4</b>	<b>MS</b>	<b>L2318940-8</b>						
Total Organic Carbon			88.9		%		70-130	30-JUL-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Chloride (Cl)			100.6		%		90-110	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Chloride (Cl)			96.1		%		75-125	30-JUL-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 3 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734715</b>							
<b>WG3121491-6</b>	<b>DUP</b>	<b>L2318940-9</b>						
Conductivity (@ 25C)		230	227		uS/cm	1.3	10	31-JUL-19
<b>WG3121491-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.7		%		90-110	31-JUL-19
<b>WG3121491-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.1		%		90-110	31-JUL-19
<b>WG3121491-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-JUL-19
<b>WG3121491-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-JUL-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Fluoride (F)			108.7		%		90-110	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Fluoride (F)			109.5		%		75-125	30-JUL-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4739056</b>							
<b>WG3122937-3</b>	<b>DUP</b>	<b>L2318940-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-AUG-19
<b>WG3122937-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.1		%		80-120	04-AUG-19
<b>WG3122937-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	04-AUG-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4739056</b>							
<b>WG3123563-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.1		%		80-120	03-AUG-19
<b>WG3123563-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	03-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 4 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736428</b>							
<b>WG3121001-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.3		%		80-120	01-AUG-19
Antimony (Sb)-Dissolved			100.6		%		80-120	01-AUG-19
Arsenic (As)-Dissolved			99.9		%		80-120	01-AUG-19
Barium (Ba)-Dissolved			107.0		%		80-120	01-AUG-19
Bismuth (Bi)-Dissolved			101.1		%		80-120	01-AUG-19
Boron (B)-Dissolved			101.2		%		80-120	01-AUG-19
Cadmium (Cd)-Dissolved			99.3		%		80-120	01-AUG-19
Calcium (Ca)-Dissolved			99.6		%		80-120	01-AUG-19
Chromium (Cr)-Dissolved			100.6		%		80-120	01-AUG-19
Cobalt (Co)-Dissolved			101.2		%		80-120	01-AUG-19
Copper (Cu)-Dissolved			100.6		%		80-120	01-AUG-19
Iron (Fe)-Dissolved			104.0		%		80-120	01-AUG-19
Lead (Pb)-Dissolved			103.1		%		80-120	01-AUG-19
Lithium (Li)-Dissolved			102.8		%		80-120	01-AUG-19
Magnesium (Mg)-Dissolved			105.2		%		80-120	01-AUG-19
Manganese (Mn)-Dissolved			99.2		%		80-120	01-AUG-19
Molybdenum (Mo)-Dissolved			101.9		%		80-120	01-AUG-19
Nickel (Ni)-Dissolved			102.5		%		80-120	01-AUG-19
Potassium (K)-Dissolved			103.4		%		80-120	01-AUG-19
Selenium (Se)-Dissolved			98.2		%		80-120	01-AUG-19
Silicon (Si)-Dissolved			111.8		%		60-140	01-AUG-19
Silver (Ag)-Dissolved			97.0		%		80-120	01-AUG-19
Sodium (Na)-Dissolved			101.9		%		80-120	01-AUG-19
Strontium (Sr)-Dissolved			102.1		%		80-120	01-AUG-19
Thallium (Tl)-Dissolved			101.2		%		80-120	01-AUG-19
Tin (Sn)-Dissolved			101.2		%		80-120	01-AUG-19
Titanium (Ti)-Dissolved			96.1		%		80-120	01-AUG-19
Uranium (U)-Dissolved			104.9		%		80-120	01-AUG-19
Vanadium (V)-Dissolved			104.5		%		80-120	01-AUG-19
Zinc (Zn)-Dissolved			104.5		%		80-120	01-AUG-19
<b>WG3121001-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 5 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736428</b>							
<b>WG3121001-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
<b>Batch</b>	<b>R4736928</b>							
<b>WG3121573-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.8		%		80-120	01-AUG-19
Antimony (Sb)-Dissolved			97.5		%		80-120	01-AUG-19
Arsenic (As)-Dissolved			99.3		%		80-120	01-AUG-19
Barium (Ba)-Dissolved			98.6		%		80-120	01-AUG-19
Bismuth (Bi)-Dissolved			96.7		%		80-120	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 6 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736928</b>							
<b>WG3121573-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			98.4		%		80-120	01-AUG-19
Cadmium (Cd)-Dissolved			100.4		%		80-120	01-AUG-19
Calcium (Ca)-Dissolved			102.0		%		80-120	01-AUG-19
Chromium (Cr)-Dissolved			98.8		%		80-120	01-AUG-19
Cobalt (Co)-Dissolved			97.6		%		80-120	01-AUG-19
Copper (Cu)-Dissolved			94.5		%		80-120	01-AUG-19
Iron (Fe)-Dissolved			95.6		%		80-120	01-AUG-19
Lead (Pb)-Dissolved			98.7		%		80-120	01-AUG-19
Lithium (Li)-Dissolved			99.0		%		80-120	01-AUG-19
Magnesium (Mg)-Dissolved			93.7		%		80-120	01-AUG-19
Manganese (Mn)-Dissolved			107.4		%		80-120	01-AUG-19
Molybdenum (Mo)-Dissolved			99.3		%		80-120	01-AUG-19
Nickel (Ni)-Dissolved			99.4		%		80-120	01-AUG-19
Potassium (K)-Dissolved			95.4		%		80-120	01-AUG-19
Selenium (Se)-Dissolved			96.0		%		80-120	01-AUG-19
Silicon (Si)-Dissolved			99.4		%		60-140	01-AUG-19
Silver (Ag)-Dissolved			98.3		%		80-120	01-AUG-19
Sodium (Na)-Dissolved			98.9		%		80-120	01-AUG-19
Strontium (Sr)-Dissolved			102.7		%		80-120	01-AUG-19
Thallium (Tl)-Dissolved			96.6		%		80-120	01-AUG-19
Tin (Sn)-Dissolved			100.2		%		80-120	01-AUG-19
Titanium (Ti)-Dissolved			96.3		%		80-120	01-AUG-19
Uranium (U)-Dissolved			95.8		%		80-120	01-AUG-19
Vanadium (V)-Dissolved			100.0		%		80-120	01-AUG-19
Zinc (Zn)-Dissolved			95.3		%		80-120	01-AUG-19
<b>WG3121573-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-AUG-19





## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 7 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736928</b>							
<b>WG3121573-1</b>	<b>MB</b>	<b>LF</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-AUG-19
<b>Batch</b>	<b>R4737868</b>							
<b>WG3122436-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.3		%		80-120	02-AUG-19
Antimony (Sb)-Dissolved			100.7		%		80-120	02-AUG-19
Arsenic (As)-Dissolved			97.5		%		80-120	02-AUG-19
Barium (Ba)-Dissolved			103.2		%		80-120	02-AUG-19
Bismuth (Bi)-Dissolved			101.6		%		80-120	02-AUG-19
Boron (B)-Dissolved			98.1		%		80-120	02-AUG-19
Cadmium (Cd)-Dissolved			97.9		%		80-120	02-AUG-19
Calcium (Ca)-Dissolved			92.9		%		80-120	02-AUG-19
Chromium (Cr)-Dissolved			97.0		%		80-120	02-AUG-19
Cobalt (Co)-Dissolved			95.6		%		80-120	02-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 8 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4737868</b>							
<b>WG3122436-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			95.5		%		80-120	02-AUG-19
Iron (Fe)-Dissolved			100.4		%		80-120	02-AUG-19
Lead (Pb)-Dissolved			98.0		%		80-120	02-AUG-19
Lithium (Li)-Dissolved			97.2		%		80-120	02-AUG-19
Magnesium (Mg)-Dissolved			95.1		%		80-120	02-AUG-19
Manganese (Mn)-Dissolved			95.8		%		80-120	02-AUG-19
Molybdenum (Mo)-Dissolved			95.2		%		80-120	02-AUG-19
Nickel (Ni)-Dissolved			97.6		%		80-120	02-AUG-19
Potassium (K)-Dissolved			95.1		%		80-120	02-AUG-19
Selenium (Se)-Dissolved			100.5		%		80-120	02-AUG-19
Silicon (Si)-Dissolved			98.6		%		60-140	02-AUG-19
Silver (Ag)-Dissolved			94.6		%		80-120	02-AUG-19
Sodium (Na)-Dissolved			101.1		%		80-120	02-AUG-19
Strontium (Sr)-Dissolved			98.2		%		80-120	02-AUG-19
Thallium (Tl)-Dissolved			98.0		%		80-120	02-AUG-19
Tin (Sn)-Dissolved			99.0		%		80-120	02-AUG-19
Titanium (Ti)-Dissolved			95.8		%		80-120	02-AUG-19
Uranium (U)-Dissolved			109.6		%		80-120	02-AUG-19
Vanadium (V)-Dissolved			100.3		%		80-120	02-AUG-19
Zinc (Zn)-Dissolved			95.0		%		80-120	02-AUG-19
<b>WG3122436-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 9 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4737868</b>							
<b>WG3122436-1</b>	<b>MB</b>	<b>NP</b>						
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-3</b>	<b>DUP</b>	<b>L2318940-9</b>						
Aluminum (Al)-Total		0.118	0.102		mg/L	15	20	01-AUG-19
Antimony (Sb)-Total		0.00014	0.00014		mg/L	1.1	20	01-AUG-19
Arsenic (As)-Total		0.00022	0.00025		mg/L	15	20	01-AUG-19
Barium (Ba)-Total		0.0901	0.0895		mg/L	0.6	20	01-AUG-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-AUG-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-AUG-19
Cadmium (Cd)-Total		0.0000423	0.0000468		mg/L	10	20	01-AUG-19
Calcium (Ca)-Total		29.3	28.1		mg/L	3.9	20	01-AUG-19
Chromium (Cr)-Total		0.00023	0.00023		mg/L	2.3	20	01-AUG-19
Cobalt (Co)-Total		0.00012	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-19
Copper (Cu)-Total		0.00061	0.00068		mg/L	12	20	01-AUG-19
Iron (Fe)-Total		0.149	0.176		mg/L	17	20	01-AUG-19
Lead (Pb)-Total		0.000143	0.000136		mg/L	4.9	20	01-AUG-19
Lithium (Li)-Total		0.0050	0.0048		mg/L	3.9	20	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 10 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-3</b>	<b>DUP</b>	<b>L2318940-9</b>						
Magnesium (Mg)-Total		10.6	10.5		mg/L	0.5	20	01-AUG-19
Molybdenum (Mo)-Total		0.000618	0.000581		mg/L	6.2	20	01-AUG-19
Nickel (Ni)-Total		0.00074	0.00056	J	mg/L	0.00018	0.001	01-AUG-19
Potassium (K)-Total		0.642	0.632		mg/L	1.5	20	01-AUG-19
Selenium (Se)-Total		0.000932	0.000920		mg/L	1.3	20	01-AUG-19
Silicon (Si)-Total		2.61	2.57		mg/L	1.6	20	01-AUG-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-AUG-19
Sodium (Na)-Total		0.613	0.600		mg/L	2.0	20	01-AUG-19
Strontium (Sr)-Total		0.0341	0.0336		mg/L	1.4	20	01-AUG-19
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-AUG-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-AUG-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-AUG-19
Uranium (U)-Total		0.000165	0.000174		mg/L	5.3	20	01-AUG-19
Vanadium (V)-Total		0.00110	0.00111		mg/L	1.2	20	01-AUG-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3120913-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.0		%		80-120	01-AUG-19
Antimony (Sb)-Total			101.7		%		80-120	01-AUG-19
Arsenic (As)-Total			97.0		%		80-120	01-AUG-19
Barium (Ba)-Total			97.4		%		80-120	01-AUG-19
Bismuth (Bi)-Total			92.6		%		80-120	01-AUG-19
Boron (B)-Total			88.6		%		80-120	01-AUG-19
Cadmium (Cd)-Total			97.8		%		80-120	01-AUG-19
Calcium (Ca)-Total			96.7		%		80-120	01-AUG-19
Chromium (Cr)-Total			98.4		%		80-120	01-AUG-19
Cobalt (Co)-Total			97.4		%		80-120	01-AUG-19
Copper (Cu)-Total			95.7		%		80-120	01-AUG-19
Iron (Fe)-Total			97.4		%		80-120	01-AUG-19
Lead (Pb)-Total			94.4		%		80-120	01-AUG-19
Lithium (Li)-Total			90.7		%		80-120	01-AUG-19
Magnesium (Mg)-Total			98.2		%		80-120	01-AUG-19
Manganese (Mn)-Total			98.5		%		80-120	01-AUG-19
Molybdenum (Mo)-Total			97.1		%		80-120	01-AUG-19
Nickel (Ni)-Total			95.9		%		80-120	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 11 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-2 LCS</b>								
Potassium (K)-Total			102.0		%		80-120	01-AUG-19
Selenium (Se)-Total			102.3		%		80-120	01-AUG-19
Silicon (Si)-Total			104.6		%		80-120	01-AUG-19
Silver (Ag)-Total			98.9		%		80-120	01-AUG-19
Sodium (Na)-Total			99.3		%		80-120	01-AUG-19
Strontium (Sr)-Total			102.4		%		80-120	01-AUG-19
Thallium (Tl)-Total			95.4		%		80-120	01-AUG-19
Tin (Sn)-Total			96.2		%		80-120	01-AUG-19
Titanium (Ti)-Total			96.6		%		80-120	01-AUG-19
Uranium (U)-Total			98.4		%		80-120	01-AUG-19
Vanadium (V)-Total			97.6		%		80-120	01-AUG-19
Zinc (Zn)-Total			102.6		%		80-120	01-AUG-19
<b>WG3120913-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	01-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-AUG-19
Magnesium (Mg)-Total			0.0059	B	mg/L		0.005	01-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 12 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-1</b>	<b>MB</b>							
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-AUG-19
<b>WG3120913-4</b>	<b>MS</b>	<b>L2318940-10</b>						
Aluminum (Al)-Total			88.1		%		70-130	01-AUG-19
Antimony (Sb)-Total			101.0		%		70-130	01-AUG-19
Arsenic (As)-Total			99.3		%		70-130	01-AUG-19
Barium (Ba)-Total			N/A	MS-B	%		-	01-AUG-19
Bismuth (Bi)-Total			92.0		%		70-130	01-AUG-19
Boron (B)-Total			90.9		%		70-130	01-AUG-19
Cadmium (Cd)-Total			99.6		%		70-130	01-AUG-19
Calcium (Ca)-Total			N/A	MS-B	%		-	01-AUG-19
Chromium (Cr)-Total			97.4		%		70-130	01-AUG-19
Cobalt (Co)-Total			95.0		%		70-130	01-AUG-19
Copper (Cu)-Total			N/A	MS-B	%		-	01-AUG-19
Iron (Fe)-Total			95.9		%		70-130	01-AUG-19
Lead (Pb)-Total			92.9		%		70-130	01-AUG-19
Lithium (Li)-Total			87.7		%		70-130	01-AUG-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	01-AUG-19
Manganese (Mn)-Total			94.4		%		70-130	01-AUG-19
Molybdenum (Mo)-Total			95.3		%		70-130	01-AUG-19
Nickel (Ni)-Total			95.8		%		70-130	01-AUG-19
Potassium (K)-Total			98.1		%		70-130	01-AUG-19
Selenium (Se)-Total			102.2		%		70-130	01-AUG-19
Silicon (Si)-Total			90.0		%		70-130	01-AUG-19
Silver (Ag)-Total			101.4		%		70-130	01-AUG-19
Sodium (Na)-Total			94.6		%		70-130	01-AUG-19
Strontium (Sr)-Total			N/A	MS-B	%		-	01-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 13 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734320</b>							
<b>WG3120913-4 MS</b>		<b>L2318940-10</b>						
Thallium (Tl)-Total			93.5		%		70-130	01-AUG-19
Tin (Sn)-Total			96.9		%		70-130	01-AUG-19
Titanium (Ti)-Total			93.8		%		70-130	01-AUG-19
Uranium (U)-Total			98.7		%		70-130	01-AUG-19
Vanadium (V)-Total			97.8		%		70-130	01-AUG-19
Zinc (Zn)-Total			100.7		%		70-130	01-AUG-19
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122403-3 DUP</b>		<b>L2318940-9</b>						
Aluminum (Al)-Total		0.118	0.0812		mg/L	3.3	20	02-AUG-19
Antimony (Sb)-Total		0.00014	0.00013		mg/L	1.1	20	02-AUG-19
Arsenic (As)-Total		0.00022	0.00022		mg/L	4.5	20	02-AUG-19
Barium (Ba)-Total		0.0901	0.0937		mg/L	1.3	20	02-AUG-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-AUG-19
Cadmium (Cd)-Total		0.0000423	0.0000422		mg/L	2.4	20	02-AUG-19
Calcium (Ca)-Total		29.3	29.5		mg/L	2.3	20	02-AUG-19
Chromium (Cr)-Total		0.00023	0.00016		mg/L	4.7	20	02-AUG-19
Cobalt (Co)-Total		0.00012	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Copper (Cu)-Total		0.00061	0.00053		mg/L	2.3	20	02-AUG-19
Iron (Fe)-Total		0.149	0.109		mg/L	7.5	20	02-AUG-19
Lead (Pb)-Total		0.000143	0.000116		mg/L	4.6	20	02-AUG-19
Lithium (Li)-Total		0.0050	0.0057		mg/L	0.5	20	02-AUG-19
Magnesium (Mg)-Total		10.6	11.8		mg/L	4.8	20	02-AUG-19
Manganese (Mn)-Total		0.00385	0.00380		mg/L	1.4	20	02-AUG-19
Molybdenum (Mo)-Total		0.000618	0.000653		mg/L	7.4	20	02-AUG-19
Nickel (Ni)-Total		0.00074	0.00061		mg/L	3.2	20	02-AUG-19
Potassium (K)-Total		0.642	0.601		mg/L	0.5	20	02-AUG-19
Selenium (Se)-Total		0.000932	0.000992		mg/L	2.8	20	02-AUG-19
Silicon (Si)-Total		2.61	2.76		mg/L	1.9	20	02-AUG-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-AUG-19
Sodium (Na)-Total		0.613	0.656		mg/L	0.5	20	02-AUG-19
Strontium (Sr)-Total		0.0341	0.0346		mg/L	0.6	20	02-AUG-19
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-AUG-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 14 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122403-3</b>	<b>DUP</b>	<b>L2318940-9</b>						
Uranium (U)-Total		0.000165	0.000164		mg/L	2.0	20	02-AUG-19
Vanadium (V)-Total		0.00110	0.00078		mg/L	0.2	20	02-AUG-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	02-AUG-19
<b>WG3122403-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			96.6		%		80-120	02-AUG-19
Antimony (Sb)-Total			102.2		%		80-120	02-AUG-19
Arsenic (As)-Total			96.2		%		80-120	02-AUG-19
Barium (Ba)-Total			98.6		%		80-120	02-AUG-19
Bismuth (Bi)-Total			98.5		%		80-120	02-AUG-19
Boron (B)-Total			102.3		%		80-120	02-AUG-19
Cadmium (Cd)-Total			97.2		%		80-120	02-AUG-19
Calcium (Ca)-Total			99.6		%		80-120	02-AUG-19
Chromium (Cr)-Total			96.6		%		80-120	02-AUG-19
Cobalt (Co)-Total			97.4		%		80-120	02-AUG-19
Copper (Cu)-Total			95.0		%		80-120	02-AUG-19
Iron (Fe)-Total			93.3		%		80-120	02-AUG-19
Lead (Pb)-Total			100.1		%		80-120	02-AUG-19
Lithium (Li)-Total			101.1		%		80-120	02-AUG-19
Magnesium (Mg)-Total			100.1		%		80-120	02-AUG-19
Manganese (Mn)-Total			98.7		%		80-120	02-AUG-19
Molybdenum (Mo)-Total			99.7		%		80-120	02-AUG-19
Nickel (Ni)-Total			96.9		%		80-120	02-AUG-19
Potassium (K)-Total			93.8		%		80-120	02-AUG-19
Selenium (Se)-Total			98.8		%		80-120	02-AUG-19
Silicon (Si)-Total			104.5		%		80-120	02-AUG-19
Silver (Ag)-Total			96.8		%		80-120	02-AUG-19
Sodium (Na)-Total			103.4		%		80-120	02-AUG-19
Strontium (Sr)-Total			101.2		%		80-120	02-AUG-19
Thallium (Tl)-Total			97.5		%		80-120	02-AUG-19
Tin (Sn)-Total			97.3		%		80-120	02-AUG-19
Titanium (Ti)-Total			97.7		%		80-120	02-AUG-19
Uranium (U)-Total			104.0		%		80-120	02-AUG-19
Vanadium (V)-Total			99.0		%		80-120	02-AUG-19
Zinc (Zn)-Total			97.3		%		80-120	02-AUG-19
<b>WG3122403-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 15 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122403-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	02-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Total			0.000069	MB-LOR	mg/L		0.00005	02-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	02-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-AUG-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 16 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4743032</b>							
<b>WG3126188-3</b>	<b>DUP</b>	<b>L2318940-6</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-AUG-19
<b>WG3126188-2</b>	<b>LCS</b>							
Ammonia as N			107.8		%		85-115	07-AUG-19
<b>WG3126188-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-AUG-19
<b>WG3126188-4</b>	<b>MS</b>	<b>L2318940-6</b>						
Ammonia as N			98.3		%		75-125	07-AUG-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Nitrite (as N)			101.1		%		90-110	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Nitrite (as N)			95.9		%		75-125	30-JUL-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Nitrate (as N)			96.8		%		75-125	30-JUL-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731451</b>							
<b>WG3120183-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	30-JUL-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4733353</b>							
<b>WG3120332-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			117.4		%		80-120	31-JUL-19
<b>WG3120332-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 17 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4733353</b>							
<b>WG3120332-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			109.3		%		80-120	31-JUL-19
<b>WG3120332-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-JUL-19
<b>WG3120332-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-JUL-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734715</b>							
<b>WG3121491-6</b>	<b>DUP</b>	<b>L2318940-9</b>						
pH		8.38	8.36	J	pH	0.02	0.2	31-JUL-19
<b>WG3121491-2</b>	<b>LCS</b>							
pH			7.04		pH		6.9-7.1	31-JUL-19
<b>WG3121491-5</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	31-JUL-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4731453</b>							
<b>WG3119439-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.1		%		80-120	30-JUL-19
<b>WG3119439-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-JUL-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734504</b>							
<b>WG3120882-13</b>	<b>DUP</b>	<b>L2318940-6</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	30-JUL-19
<b>WG3120882-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	30-JUL-19
<b>WG3120882-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-JUL-19
<b>WG3120882-14</b>	<b>MS</b>	<b>L2318940-6</b>						
Sulfate (SO4)			96.8		%		75-125	30-JUL-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4734603</b>							
<b>WG3120245-6</b>	<b>DUP</b>	<b>L2318940-5</b>						
Total Dissolved Solids		917	915		mg/L	0.2	20	31-JUL-19
<b>WG3120245-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.0		%		85-115	31-JUL-19
<b>WG3120245-5</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 18 of 20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734603</b>							
<b>WG3120245-5</b>	<b>LCS</b>							
Total Dissolved Solids			103.4		%		85-115	31-JUL-19
<b>WG3120245-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	31-JUL-19
<b>WG3120245-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	31-JUL-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734348</b>							
<b>WG3121476-3</b>	<b>DUP</b>	<b>L2318940-1</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-JUL-19
<b>WG3121476-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	29-JUL-19
<b>WG3121476-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.6		%		75-125	29-JUL-19
<b>WG3121476-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JUL-19
<b>WG3121476-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JUL-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738785</b>							
<b>WG3121406-2</b>	<b>LCS</b>							
Total Suspended Solids			100.2		%		85-115	01-AUG-19
<b>WG3121406-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-AUG-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4731470</b>							
<b>WG3119564-2</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	30-JUL-19
<b>WG3119564-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-JUL-19

# Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 19 of 20

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2318940

Report Date: 15-AUG-19

Page 20 of 20

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	29-JUL-19 10:33	30-JUL-19 19:00	0.25	32	hours	EHTR-FM
	2	29-JUL-19 10:30	30-JUL-19 19:00	0.25	32	hours	EHTR-FM
	3	29-JUL-19 13:45	30-JUL-19 19:00	0.25	29	hours	EHTR-FM
	4	29-JUL-19 13:47	30-JUL-19 19:00	0.25	29	hours	EHTR-FM
	5	29-JUL-19 12:53	30-JUL-19 19:00	0.25	30	hours	EHTR-FM
	6	29-JUL-19 12:00	30-JUL-19 19:00	0.25	31	hours	EHTR-FM
	7	29-JUL-19 12:53	30-JUL-19 19:00	0.25	30	hours	EHTR-FM
	8	29-JUL-19 12:31	30-JUL-19 19:00	0.25	30	hours	EHTR-FM
	9	29-JUL-19 14:00	30-JUL-19 19:00	0.25	29	hours	EHTR-FM
pH							
	1	29-JUL-19 10:33	31-JUL-19 13:00	0.25	50	hours	EHTR-FM
	2	29-JUL-19 10:30	31-JUL-19 13:00	0.25	50	hours	EHTR-FM
	3	29-JUL-19 13:45	31-JUL-19 13:00	0.25	47	hours	EHTR-FM
	4	29-JUL-19 13:47	31-JUL-19 13:00	0.25	47	hours	EHTR-FM
	5	29-JUL-19 12:53	31-JUL-19 13:00	0.25	48	hours	EHTR-FM
	6	29-JUL-19 12:00	31-JUL-19 13:00	0.25	49	hours	EHTR-FM
	7	29-JUL-19 12:53	31-JUL-19 13:00	0.25	48	hours	EHTR-FM
	8	29-JUL-19 12:31	31-JUL-19 13:00	0.25	48	hours	EHTR-FM
	9	29-JUL-19 14:00	31-JUL-19 13:00	0.25	47	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2318940 were received on 30-JUL-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>20190729-1437</b>		TURNAROUND TIME:			RUSH:							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			Email 6:	teckcoal@teckonline.com			X
								PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-TKN/TOC	ALS Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	ALS Package-Anions/Nutrients	HG-T-CVAF-VA				
FR_09-01-A_QTR_2019-07-01_N	FR_09-01-A	WG		7/29/2019	10:33	G	5	1	1	1	1	1							
FR_09-01-B_QTR_2019-07-01_N	FR_09-01-B	WG		7/29/2019	10:30	G	5	1	1	1	1	1							
FR_09-04-A_QTR_2019-07-01_N	FR_09-04-A	WG		7/29/2019	13:45	G	5	1	1	1	1	1							
FR_09-04-B_QTR_2019-07-01_N	FR_09-04-B	WG		7/29/2019	13:47	G	5	1	1	1	1	1							
FR_DC2_QTR_2019-07-01_N	FR_DC2	WG		7/29/2019	12:53	G	5	1	1	1	1	1							
FR_FLD_QTR_2019-07-01_N	FR_FLD	WG		7/29/2019	12:00	G	5	1	1	1	1	1							
FR_MW-SK1A_QTR_2019-07-01_N	FR_MW-SK1A	WG		7/29/2019	12:53	G	5	1	1	1	1	1							
FR_MW-SK1B_QTR_2019-07-01_N	FR_MW-SK1B	WG		7/29/2019	12:31	G	5	1	1	1	1	1							
FR_CASW5A_WS_2019-07-27_NP	FR_CASW5A	WG		7/29/2019	14:00	G	3				1	1	1						
FR_POTABLE_WP_2019-07-29_N	FR_POTABLE	WG		7/29/2019	8:00	G	3							1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Cruz Canlas	DATE/TIME July 29, 2019	ACCEPTED BY/AFFILIATION 	DATE/TIME 7/30 9:30
--	--	----------------------------	-----------------------------	------------------------

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Cruz Canlas		Mobile #	250-433-6253
Sampler's Signature			Date/Time	July 29, 2019

15c



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3


Date Received: 31-JUL-19  
Report Date: 16-AUG-19 15:53 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2320330  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers:  
Legal Site Desc:

Comments: ADDITIONAL 15-AUG-19 11:55

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2320330-1	L2320330-2		
		Description	WG	WG		
		Sampled Date	30-JUL-19	30-JUL-19		
		Sampled Time	12:23	14:20		
		Client ID	FR_KB_3A_2019-07-30	FR_KB_3B_2019-07-30		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1950	1580			
	Hardness (as CaCO3) (mg/L)	1140	888			
	pH (pH)	8.09	8.06			
	ORP (mV)	355	337			
	Total Suspended Solids (mg/L)	5.6	2.0			
	Total Dissolved Solids (mg/L)	1680 <sup>DLHC</sup>	1290 <sup>DLHC</sup>			
	Turbidity (NTU)	1.14	2.11			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.0	15.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	331	303			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	331	303			
	Ammonia as N (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>			
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.10 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>			
	Ion Balance (%)	96.8 <sup>DLHC</sup>	96.5 <sup>DLHC</sup>			
	Nitrate (as N) (mg/L)	71.4 <sup>DLHC</sup>	54.0 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015	0.0016			
	Phosphorus (P)-Total (mg/L)	0.0095 <sup>DLHC</sup>	0.0089 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	583	417			
	Anion Sum (meq/L)	23.8	18.6			
	Cation Sum (meq/L)	23.1	18.0			
	Cation - Anion Balance (%)	-1.6	-1.8			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
Total Organic Carbon (mg/L)		0.67	<0.50			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00020	0.00012			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0635	0.0631			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2320330-1	L2320330-2		
		Description	WG	WG		
		Sampled Date	30-JUL-19	30-JUL-19		
		Sampled Time	12:23	14:20		
		Client ID	FR_KB_3A_2019-07-30	FR_KB_3B_2019-07-30		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)		0.017	0.019		
	Cadmium (Cd)-Dissolved (ug/L)		0.0199	0.0217		
	Calcium (Ca)-Dissolved (mg/L)		282	207		
	Chromium (Cr)-Dissolved (mg/L)		0.00014	0.00010		
	Cobalt (Co)-Dissolved (ug/L)		2.81	0.39		
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050		
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)		0.0391	0.0521		
	Magnesium (Mg)-Dissolved (mg/L)		107	90.0		
	Manganese (Mn)-Dissolved (mg/L)		0.00248	0.00120		
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)		0.00126	0.000526		
	Nickel (Ni)-Dissolved (mg/L)		0.00084	<0.00050		
	Potassium (K)-Dissolved (mg/L)		1.87	2.49		
	Selenium (Se)-Dissolved (ug/L)		266	200		
	Silicon (Si)-Dissolved (mg/L)		3.03	2.42		
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)		3.75	3.43		
	Strontium (Sr)-Dissolved (mg/L)		0.318	0.210		
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)		0.00563	0.00586		
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)		0.0051	0.0014		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2320330-1, -2
Matrix Spike	Phosphorus (P)-Total	MS-B	L2320330-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking			

## Reference Information

Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4737969</b>							
<b>WG3122702-6</b>	<b>DUP</b>	<b>L2320330-2</b>						
Acidity (as CaCO3)		15.6	16.2		mg/L	3.7	20	01-AUG-19
<b>WG3122702-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.8		%		85-115	01-AUG-19
<b>WG3122702-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	01-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738191</b>							
<b>WG3122728-15</b>	<b>DUP</b>	<b>L2320330-1</b>						
Alkalinity, Total (as CaCO3)		331	335		mg/L	1.4	20	01-AUG-19
<b>WG3122728-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	01-AUG-19
<b>WG3122728-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	01-AUG-19
<b>WG3122728-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-AUG-19
<b>WG3122728-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			105.5		%		80-120	02-AUG-19
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734314</b>							
<b>WG3121433-6</b>	<b>LCS</b>							
Bromide (Br)			103.9		%		85-115	31-JUL-19
<b>WG3121433-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738149</b>							
<b>WG3122974-7</b>	<b>DUP</b>	<b>L2320330-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122974-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			104.6		%		80-120	01-AUG-19
<b>WG3122974-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4738149							
<b>WG3122974-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-AUG-19
<b>WG3122974-8</b>	<b>MS</b>	<b>L2320330-2</b>						
Dissolved Organic Carbon			80.8		%		70-130	01-AUG-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4738149							
<b>WG3122974-7</b>	<b>DUP</b>	<b>L2320330-1</b>						
Total Organic Carbon			0.67		mg/L	0.3	20	01-AUG-19
<b>WG3122974-6</b>	<b>LCS</b>							
Total Organic Carbon			96.3		%		80-120	01-AUG-19
<b>WG3122974-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-AUG-19
<b>WG3122974-8</b>	<b>MS</b>	<b>L2320330-2</b>						
Total Organic Carbon			80.7		%		70-130	01-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4734314							
<b>WG3121433-6</b>	<b>LCS</b>							
Chloride (Cl)			102.4		%		90-110	31-JUL-19
<b>WG3121433-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-JUL-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4738191							
<b>WG3122728-15</b>	<b>DUP</b>	<b>L2320330-1</b>						
Conductivity (@ 25C)			1950		uS/cm	0.6	10	01-AUG-19
<b>WG3122728-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.6		%		90-110	01-AUG-19
<b>WG3122728-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	01-AUG-19
<b>WG3122728-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-AUG-19
<b>WG3122728-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4734314							
<b>WG3121433-6</b>	<b>LCS</b>							
Fluoride (F)			108.8		%		90-110	31-JUL-19
<b>WG3121433-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4734314</b>								
<b>WG3121433-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	31-JUL-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch R4739056</b>								
<b>WG3122937-6 LCS</b>								
Mercury (Hg)-Dissolved			99.1		%		80-120	04-AUG-19
<b>WG3122937-5 MB</b>								
Mercury (Hg)-Dissolved		NP	<0.000005C		mg/L		0.000005	04-AUG-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch R4739056</b>								
<b>WG3123563-2 LCS</b>								
Mercury (Hg)-Total			99.1		%		80-120	03-AUG-19
<b>WG3123563-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	03-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch R4738194</b>								
<b>WG3122503-2 LCS</b>								
Aluminum (Al)-Dissolved			99.5		%		80-120	02-AUG-19
Antimony (Sb)-Dissolved			103.1		%		80-120	02-AUG-19
Arsenic (As)-Dissolved			103.0		%		80-120	02-AUG-19
Barium (Ba)-Dissolved			108.2		%		80-120	02-AUG-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	02-AUG-19
Boron (B)-Dissolved			103.0		%		80-120	02-AUG-19
Cadmium (Cd)-Dissolved			106.8		%		80-120	02-AUG-19
Calcium (Ca)-Dissolved			102.3		%		80-120	02-AUG-19
Chromium (Cr)-Dissolved			98.3		%		80-120	02-AUG-19
Cobalt (Co)-Dissolved			100.3		%		80-120	02-AUG-19
Copper (Cu)-Dissolved			99.6		%		80-120	02-AUG-19
Iron (Fe)-Dissolved			97.4		%		80-120	02-AUG-19
Lead (Pb)-Dissolved			99.9		%		80-120	02-AUG-19
Lithium (Li)-Dissolved			104.5		%		80-120	02-AUG-19
Magnesium (Mg)-Dissolved			103.5		%		80-120	02-AUG-19
Manganese (Mn)-Dissolved			100.8		%		80-120	02-AUG-19
Molybdenum (Mo)-Dissolved			102.4		%		80-120	02-AUG-19
Nickel (Ni)-Dissolved			99.99		%		80-120	02-AUG-19





## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			97.5		%		80-120	02-AUG-19
Selenium (Se)-Dissolved			111.3		%		80-120	02-AUG-19
Silicon (Si)-Dissolved			104.3		%		60-140	02-AUG-19
Silver (Ag)-Dissolved			98.3		%		80-120	02-AUG-19
Sodium (Na)-Dissolved			104.3		%		80-120	02-AUG-19
Strontium (Sr)-Dissolved			103.1		%		80-120	02-AUG-19
Thallium (Tl)-Dissolved			96.8		%		80-120	02-AUG-19
Tin (Sn)-Dissolved			101.8		%		80-120	02-AUG-19
Titanium (Ti)-Dissolved			100.3		%		80-120	02-AUG-19
Uranium (U)-Dissolved			99.6		%		80-120	02-AUG-19
Vanadium (V)-Dissolved			102.5		%		80-120	02-AUG-19
Zinc (Zn)-Dissolved			108.8		%		80-120	02-AUG-19
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-AUG-19



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4744620</b>							
<b>WG3127485-30</b>	<b>LCS</b>							
Ammonia as N			107.6		%		85-115	08-AUG-19
<b>WG3127485-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	08-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734314</b>							
<b>WG3121433-6</b>	<b>LCS</b>							
Nitrite (as N)			103.4		%		90-110	31-JUL-19
<b>WG3121433-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	31-JUL-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734314</b>							
<b>WG3121433-6</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	31-JUL-19
<b>WG3121433-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	31-JUL-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4736591</b>							
<b>WG3122214-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	01-AUG-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4739251							
<b>WG3123783-2</b> <b>LCS</b>								
Phosphorus (P)-Total			96.9		%		80-120	03-AUG-19
<b>WG3123783-1</b> <b>MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-AUG-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4738191							
<b>WG3122728-15</b> <b>DUP</b>		<b>L2320330-1</b>						
pH		8.09	8.08	J	pH	0.01	0.2	01-AUG-19
<b>WG3122728-14</b> <b>LCS</b>								
pH			7.03		pH		6.9-7.1	01-AUG-19
<b>WG3122728-17</b> <b>LCS</b>								
pH			7.03		pH		6.9-7.1	01-AUG-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4734410							
<b>WG3120836-15</b> <b>DUP</b>		<b>L2320330-2</b>						
Orthophosphate-Dissolved (as P)		0.0016	0.0016		mg/L	3.2	20	31-JUL-19
<b>WG3120836-14</b> <b>LCS</b>								
Orthophosphate-Dissolved (as P)			102.0		%		80-120	31-JUL-19
<b>WG3120836-13</b> <b>MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-JUL-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4734314							
<b>WG3121433-6</b> <b>LCS</b>								
Sulfate (SO4)			101.3		%		90-110	31-JUL-19
<b>WG3121433-5</b> <b>MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	31-JUL-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4738188							
<b>WG3121447-8</b> <b>LCS</b>								
Total Dissolved Solids			98.0		%		85-115	01-AUG-19
<b>WG3121447-7</b> <b>MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-AUG-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4757817							
<b>WG3135195-13</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			97.8		%		75-125	16-AUG-19
<b>WG3135195-5</b> <b>LCS</b>								



## Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4757817</b>							
<b>WG3135195-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.3		%		75-125	16-AUG-19
<b>WG3135195-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.7		%		75-125	16-AUG-19
<b>WG3135195-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-AUG-19
<b>WG3135195-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-AUG-19
<b>WG3135195-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4740155</b>							
<b>WG3122785-22</b>	<b>LCS</b>							
Total Suspended Solids			103.4		%		85-115	02-AUG-19
<b>WG3122785-24</b>	<b>LCS</b>							
Total Suspended Solids			110.4		%		85-115	02-AUG-19
<b>WG3122785-21</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-AUG-19
<b>WG3122785-23</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4734318</b>							
<b>WG3120639-39</b>	<b>LCS</b>							
Turbidity			100.5		%		85-115	31-JUL-19
<b>WG3120639-2</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-JUL-19

# Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2320330

Report Date: 16-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	30-JUL-19 12:23	01-AUG-19 14:00	0.25	50	hours	EHTR-FM
	2	30-JUL-19 14:20	01-AUG-19 09:40	0.25	43	hours	EHTR-FM
pH	1	30-JUL-19 12:23	01-AUG-19 11:00	0.25	47	hours	EHTR-FM
	2	30-JUL-19 14:20	01-AUG-19 11:00	0.25	45	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2320330 were received on 31-JUL-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: TURNAROUND TIME: Regular RUSH:

PROJECT INFORMATION				LABORATORY				OTHER INFO				
Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X	
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSglobal.com			Email 2:	X	X	X	
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:				
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:				
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00597209			

SAMPLE DETAILS

ANALYSIS REQUESTED



L2320330-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL						
FR-KB-3A-2019-07-30	FR-KB-3A	WG	N	07/30/19	12:23	G	6	1	1	1	1	1	1						
FR-KB-3B-2019-07-30	FR-KB-3B	WG	N	07/30/19	14:20	G	6	1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						
		WG				G		1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				7/31 9:05

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend, - Contact ALS		250-946-5029
	Sampler's Signature	Date/Time
		July 30/19

11c



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 31-JUL-19  
Report Date: 15-AUG-19 12:41 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2320494  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190730-1402  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2320494-1	L2320494-2		
		Description	WG	WG		
		Sampled Date	30-JUL-19	30-JUL-19		
		Sampled Time	10:37	10:37		
		Client ID	FR_DC3_QTR_201 9-07-01_N	FR_GH_WELL4_Q TR_2019-07-01_N		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1280	1280		
	Hardness (as CaCO3) (mg/L)		738	720		
	pH (pH)		8.28	8.27		
	ORP (mV)		458	431		
	Total Suspended Solids (mg/L)		<1.0	<1.0		
	Total Dissolved Solids (mg/L)		1040 <sup>DLHC</sup>	984 <sup>DLHC</sup>		
	Turbidity (NTU)		0.24	0.26		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		8.1	8.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		269	284		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		269	284		
	Ammonia as N (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>		
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)		3.1 <sup>DLHC</sup>	3.4 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)		0.13 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>		
	Ion Balance (%)		98.5 <sup>DLHC</sup>	93.8 <sup>DLHC</sup>		
	Nitrate (as N) (mg/L)		36.7 <sup>DLHC</sup>	36.6 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)		<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0011	0.0012		
	Phosphorus (P)-Total (mg/L)		<0.0020 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>		
	Sulfate (SO4) (mg/L)		339	342		
	Anion Sum (meq/L)		15.1	15.5		
	Cation Sum (meq/L)		14.9	14.5		
	Cation - Anion Balance (%)		-0.7	-3.2		
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.19	0.53	
Total Organic Carbon (mg/L)			1.26	0.58		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)		0.0922	0.0925		
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2320494-1	L2320494-2			
		Description	WG	WG			
		Sampled Date	30-JUL-19	30-JUL-19			
		Sampled Time	10:37	10:37			
		Client ID	FR_DC3_QTR_201 9-07-01_N	FR_GH_WELL4_Q TR_2019-07-01_N			
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.011	0.010			
	Cadmium (Cd)-Dissolved (ug/L)		0.0519	0.0562			
	Calcium (Ca)-Dissolved (mg/L)		183	175			
	Chromium (Cr)-Dissolved (mg/L)		0.00011	0.00014			
	Cobalt (Co)-Dissolved (ug/L)		0.44	0.42			
	Copper (Cu)-Dissolved (mg/L)		0.00078	0.00076			
	Iron (Fe)-Dissolved (mg/L)		0.014	0.014			
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)		0.0331	0.0317			
	Magnesium (Mg)-Dissolved (mg/L)		68.3	68.8			
	Manganese (Mn)-Dissolved (mg/L)		0.00080	0.00090			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.000348	0.000365			
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050			
	Potassium (K)-Dissolved (mg/L)		1.54	1.49			
	Selenium (Se)-Dissolved (ug/L)		117	118			
	Silicon (Si)-Dissolved (mg/L)		2.65	2.61			
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)		2.83	2.69			
	Strontium (Sr)-Dissolved (mg/L)		0.241	0.237			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00399	0.00377			
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0297	0.0294			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L2320494-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulfate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			

## Reference Information

**TURBIDITY-CL**

Water Turbidity

APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20190730-1402

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg ww - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4739211							
<b>WG3123743-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4739211							
<b>WG3123743-2</b>	<b>LCS</b>							
Total Organic Carbon			110.4		%		80-120	02-AUG-19
<b>WG3123743-6</b>	<b>LCS</b>							
Total Organic Carbon			110.1		%		80-120	02-AUG-19
<b>WG3123743-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>WG3123743-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4734314							
<b>WG3121433-10</b>	<b>LCS</b>							
Chloride (Cl)			102.2		%		90-110	31-JUL-19
<b>WG3121433-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-JUL-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4738191							
<b>WG3122728-18</b>	<b>DUP</b>	<b>L2320494-1</b>						
Conductivity (@ 25C)			1280		uS/cm	0.6	10	01-AUG-19
<b>WG3122728-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	01-AUG-19
<b>WG3122728-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-AUG-19
Batch	R4739898							
<b>WG3124354-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.3		%		90-110	02-AUG-19
<b>WG3124354-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4734314							
<b>WG3121433-10</b>	<b>LCS</b>							
Fluoride (F)			107.5		%		90-110	31-JUL-19
<b>WG3121433-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4734314							
<b>WG3121433-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	31-JUL-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4739436							
<b>WG3123697-2 LCS</b>								
Mercury (Hg)-Dissolved			99.6		%		80-120	04-AUG-19
<b>WG3123697-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4738756							
<b>WG3122539-2 LCS</b>								
Aluminum (Al)-Dissolved			101.4		%		80-120	02-AUG-19
Antimony (Sb)-Dissolved			109.2		%		80-120	02-AUG-19
Arsenic (As)-Dissolved			105.0		%		80-120	02-AUG-19
Barium (Ba)-Dissolved			105.2		%		80-120	02-AUG-19
Bismuth (Bi)-Dissolved			102.6		%		80-120	02-AUG-19
Boron (B)-Dissolved			106.6		%		80-120	02-AUG-19
Cadmium (Cd)-Dissolved			110.0		%		80-120	02-AUG-19
Calcium (Ca)-Dissolved			107.0		%		80-120	02-AUG-19
Chromium (Cr)-Dissolved			103.5		%		80-120	02-AUG-19
Cobalt (Co)-Dissolved			103.4		%		80-120	02-AUG-19
Copper (Cu)-Dissolved			103.5		%		80-120	02-AUG-19
Iron (Fe)-Dissolved			100.5		%		80-120	02-AUG-19
Lead (Pb)-Dissolved			108.8		%		80-120	02-AUG-19
Lithium (Li)-Dissolved			109.1		%		80-120	02-AUG-19
Magnesium (Mg)-Dissolved			105.1		%		80-120	02-AUG-19
Manganese (Mn)-Dissolved			104.1		%		80-120	02-AUG-19
Molybdenum (Mo)-Dissolved			109.4		%		80-120	02-AUG-19
Nickel (Ni)-Dissolved			103.8		%		80-120	02-AUG-19
Potassium (K)-Dissolved			110.0		%		80-120	02-AUG-19
Selenium (Se)-Dissolved			103.3		%		80-120	02-AUG-19
Silicon (Si)-Dissolved			102.2		%		60-140	02-AUG-19
Silver (Ag)-Dissolved			105.8		%		80-120	02-AUG-19
Sodium (Na)-Dissolved			110.6		%		80-120	02-AUG-19
Strontium (Sr)-Dissolved			111.4		%		80-120	02-AUG-19





## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738756</b>							
<b>WG3122539-2</b>	<b>LCS</b>							
Thallium (Tl)-Dissolved			105.0		%		80-120	02-AUG-19
Tin (Sn)-Dissolved			106.1		%		80-120	02-AUG-19
Titanium (Ti)-Dissolved			104.7		%		80-120	02-AUG-19
Uranium (U)-Dissolved			109.8		%		80-120	02-AUG-19
Vanadium (V)-Dissolved			105.9		%		80-120	02-AUG-19
Zinc (Zn)-Dissolved			106.3		%		80-120	02-AUG-19
<b>WG3122539-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-AUG-19



## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4738756							
<b>WG3122539-1 MB</b>		<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4744620							
<b>WG3127485-34 LCS</b>								
Ammonia as N			104.2		%		85-115	08-AUG-19
<b>WG3127485-33 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	08-AUG-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4734314							
<b>WG3121433-10 LCS</b>								
Nitrite (as N)			103.1		%		90-110	31-JUL-19
<b>WG3121433-9 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	31-JUL-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4734314							
<b>WG3121433-10 LCS</b>								
Nitrate (as N)			101.5		%		90-110	31-JUL-19
<b>WG3121433-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	31-JUL-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4739043							
<b>WG3123582-1 CRM</b>		<b>CL-ORP</b>						
ORP			218		mV		210-230	02-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4739251							
<b>WG3123783-6 LCS</b>								
Phosphorus (P)-Total			102.6		%		80-120	03-AUG-19
<b>WG3123783-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-AUG-19
<b>PH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4738191							
WG3122728-18	DUP	L2320494-1						
pH		8.28	8.29	J	pH	0.01	0.2	01-AUG-19
WG3122728-17	LCS							
pH			7.03		pH		6.9-7.1	01-AUG-19
Batch	R4739898							
WG3124354-2	LCS							
pH			7.04		pH		6.9-7.1	02-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4734410							
WG3120836-19	DUP	L2320494-2						
Orthophosphate-Dissolved (as P)		0.0012	0.0013		mg/L	11	20	31-JUL-19
WG3120836-18	LCS							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	31-JUL-19
WG3120836-22	LCS							
Orthophosphate-Dissolved (as P)			100.3		%		80-120	31-JUL-19
WG3120836-17	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-JUL-19
WG3120836-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-JUL-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4734314							
WG3121433-10	LCS							
Sulfate (SO4)			101.2		%		90-110	31-JUL-19
WG3121433-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	31-JUL-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4738188							
WG3121447-12	DUP	L2320494-2						
Total Dissolved Solids		984	978		mg/L	0.7	20	01-AUG-19
WG3121447-11	LCS							
Total Dissolved Solids			97.9		%		85-115	01-AUG-19
WG3121447-10	MB							
Total Dissolved Solids			<10		mg/L		10	01-AUG-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4744512</b>							
<b>WG3127050-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.6		%		75-125	08-AUG-19
<b>WG3127050-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.2		%		75-125	08-AUG-19
<b>WG3127050-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.2		%		75-125	08-AUG-19
<b>WG3127050-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>WG3127050-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>WG3127050-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4740155</b>							
<b>WG3122785-26</b>	<b>LCS</b>							
Total Suspended Solids			110.3		%		85-115	02-AUG-19
<b>WG3122785-25</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-AUG-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4734318</b>							
<b>WG3120639-44</b>	<b>DUP</b>	<b>L2320494-2</b>						
Turbidity		0.26	0.27		NTU	0.4	15	31-JUL-19
<b>WG3120639-43</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	31-JUL-19
<b>WG3120639-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-JUL-19

# Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2320494

Report Date: 15-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	30-JUL-19 10:37	02-AUG-19 08:00	0.25	69	hours	EHTR-FM
	2	30-JUL-19 10:37	02-AUG-19 08:00	0.25	69	hours	EHTR-FM
pH	1	30-JUL-19 10:37	01-AUG-19 11:00	0.25	48	hours	EHTR-FM
	2	30-JUL-19 10:37	02-AUG-19 10:00	0.25	71	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2320494 were received on 31-JUL-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20190730-1402**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jared.cayanna@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughhead@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			Email 6:	teckcoal@equisonline.com			X
								PO number				

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, F1: Field & Lab, N: None																										
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-TKN/TOC	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	N	Y	Y	Y	N																					
FR_DC3_QTR_2019-07-01_N	FR_DC3	WG		2019/07/30	10:37	G	5																															
FR_GH_WELL4_QTR_2019-07-01_N	FR_GH_WELL4	WG		2019/07/30	10:37	G	5																															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Cruz Canlas	July 30, 2019		7/31 9:05
SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name	Cruz Canlas	Mobile #	250-433-6253
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	July 30, 2019
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

10°C




TECK COAL LIMITED (FORDING RIVER)  
ATTN: Neil Macdonald  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 01-AUG-19  
Report Date: 10-AUG-19 14:43 (MT)  
Version: FINAL

Client Phone: 250-865-5204

## Certificate of Analysis

Lab Work Order #: L2321399  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190721-1220  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2321399-1	L2321399-2			
		Description	WG	WG			
		Sampled Date	31-JUL-19	31-JUL-19			
		Sampled Time	11:15	09:37			
		Client ID	FR_POTWELLS_Q TR_2019-07-01_N	FR_TT43_QTR_20 19-07-01_N			
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	365	1190				
	Hardness (as CaCO3) (mg/L)	192	700				
	pH (pH)	8.35	8.14				
	ORP (mV)	470	340				
	Total Suspended Solids (mg/L)	<1.0	<1.0				
	Total Dissolved Solids (mg/L)	224 <sup>DLHC</sup>	833 <sup>DLHC</sup>				
	Turbidity (NTU)	<0.10	0.36				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	15.4				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	132	372				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.0	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	135	372				
	Ammonia as N (mg/L)	<0.0050	0.0086				
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>				
	Chloride (Cl) (mg/L)	<0.50	<2.5 <sup>DLHC</sup>				
	Fluoride (F) (mg/L)	0.223	0.12 <sup>DLHC</sup>				
	Ion Balance (%)	101	103				
	Nitrate (as N) (mg/L)	1.13	26.8 <sup>DLHC</sup>				
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>				
	Total Kjeldahl Nitrogen (mg/L)	0.278	<0.25 <sup>TKNI</sup>				
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0023				
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020 <sup>DLHC</sup>				
	Sulfate (SO4) (mg/L)	50.2	215				
	Anion Sum (meq/L)	3.83	13.8				
	Cation Sum (meq/L)	3.89	14.2				
	Cation - Anion Balance (%)	0.7	1.3				
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.68	0.56			
Total Organic Carbon (mg/L)		0.70	0.59				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD				
	Dissolved Metals Filtration Location	FIELD	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030				
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00040				
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010				
	Barium (Ba)-Dissolved (mg/L)	0.0489	0.0523				
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020				
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2321399-1	L2321399-2			
		Description	WG	WG			
		Sampled Date	31-JUL-19	31-JUL-19			
		Sampled Time	11:15	09:37			
		Client ID	FR_POTWELLS_Q TR_2019-07-01_N	FR_TT43_QTR_20 19-07-01_N			
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		<0.010	0.027			
	Cadmium (Cd)-Dissolved (ug/L)		0.0062	0.0316			
	Calcium (Ca)-Dissolved (mg/L)		49.5	157			
	Chromium (Cr)-Dissolved (mg/L)		0.00012	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)		0.00243	<0.00050			
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)		0.000053	<0.000050			
	Lithium (Li)-Dissolved (mg/L)		0.0051	0.0567			
	Magnesium (Mg)-Dissolved (mg/L)		16.7	74.9			
	Manganese (Mn)-Dissolved (mg/L)		0.00026	0.00013			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.000711	0.00109			
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00068			
	Potassium (K)-Dissolved (mg/L)		0.619	3.46			
	Selenium (Se)-Dissolved (ug/L)		8.32	118			
	Silicon (Si)-Dissolved (mg/L)		1.71	2.09			
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)		0.659	2.64			
	Strontium (Sr)-Dissolved (mg/L)		0.0887	0.140			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)		0.000707	0.00576			
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0079	0.0022			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2321399-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2321399-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2321399-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2321399-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2321399-1, -2
Matrix Spike	Sulfate (SO4)	MS-B	L2321399-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190721-1220

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Neil Macdonald

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4737969							
<b>WG3122702-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.9		%		85-115	01-AUG-19
<b>WG3122702-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	01-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4738191							
<b>WG3122728-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	01-AUG-19
<b>WG3122728-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4739888							
<b>WG3123340-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.6		%		80-120	03-AUG-19
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4737309							
<b>WG3122762-10</b>	<b>LCS</b>							
Bromide (Br)			96.0		%		85-115	01-AUG-19
<b>WG3122762-6</b>	<b>LCS</b>							
Bromide (Br)			96.0		%		85-115	01-AUG-19
<b>WG3122762-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-AUG-19
<b>WG3122762-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4739320							
<b>WG3123901-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			109.2		%		80-120	02-AUG-19
<b>WG3123901-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4739320							
<b>WG3123901-2</b>	<b>LCS</b>							
Total Organic Carbon			114.3		%		80-120	02-AUG-19
<b>WG3123901-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4739320							
<b>WG3123901-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4737309							
<b>WG3122762-10 LCS</b>								
Chloride (Cl)			96.5		%		90-110	01-AUG-19
<b>WG3122762-6 LCS</b>								
Chloride (Cl)			93.1		%		90-110	01-AUG-19
<b>WG3122762-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	01-AUG-19
<b>WG3122762-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	01-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4738191							
<b>WG3122728-20 LCS</b>								
Conductivity (@ 25C)			98.1		%		90-110	01-AUG-19
<b>WG3122728-19 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4737309							
<b>WG3122762-10 LCS</b>								
Fluoride (F)			102.2		%		90-110	01-AUG-19
<b>WG3122762-6 LCS</b>								
Fluoride (F)			104.2		%		90-110	01-AUG-19
<b>WG3122762-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	01-AUG-19
<b>WG3122762-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	01-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4742291							
<b>WG3125124-2 LCS</b>								
Mercury (Hg)-Dissolved			100.2		%		80-120	07-AUG-19
<b>WG3125124-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739888</b>							
<b>WG3123340-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			89.3		%		80-120	03-AUG-19
Antimony (Sb)-Dissolved			88.6		%		80-120	03-AUG-19
Arsenic (As)-Dissolved			90.5		%		80-120	03-AUG-19
Barium (Ba)-Dissolved			92.7		%		80-120	03-AUG-19
Bismuth (Bi)-Dissolved			90.3		%		80-120	03-AUG-19
Boron (B)-Dissolved			89.2		%		80-120	03-AUG-19
Cadmium (Cd)-Dissolved			94.3		%		80-120	03-AUG-19
Calcium (Ca)-Dissolved			89.2		%		80-120	03-AUG-19
Chromium (Cr)-Dissolved			90.9		%		80-120	03-AUG-19
Cobalt (Co)-Dissolved			89.2		%		80-120	03-AUG-19
Copper (Cu)-Dissolved			90.4		%		80-120	03-AUG-19
Iron (Fe)-Dissolved			84.7		%		80-120	03-AUG-19
Lead (Pb)-Dissolved			90.6		%		80-120	03-AUG-19
Lithium (Li)-Dissolved			88.2		%		80-120	03-AUG-19
Magnesium (Mg)-Dissolved			92.5		%		80-120	03-AUG-19
Manganese (Mn)-Dissolved			89.6		%		80-120	03-AUG-19
Molybdenum (Mo)-Dissolved			89.6		%		80-120	03-AUG-19
Nickel (Ni)-Dissolved			89.1		%		80-120	03-AUG-19
Potassium (K)-Dissolved			85.8		%		80-120	03-AUG-19
Selenium (Se)-Dissolved			95.7		%		80-120	03-AUG-19
Silicon (Si)-Dissolved			93.3		%		60-140	03-AUG-19
Silver (Ag)-Dissolved			88.1		%		80-120	03-AUG-19
Sodium (Na)-Dissolved			93.1		%		80-120	03-AUG-19
Strontium (Sr)-Dissolved			90.1		%		80-120	03-AUG-19
Thallium (Tl)-Dissolved			88.8		%		80-120	03-AUG-19
Tin (Sn)-Dissolved			90.0		%		80-120	03-AUG-19
Titanium (Ti)-Dissolved			85.3		%		80-120	03-AUG-19
Uranium (U)-Dissolved			91.8		%		80-120	03-AUG-19
Vanadium (V)-Dissolved			89.7		%		80-120	03-AUG-19
Zinc (Zn)-Dissolved			93.1		%		80-120	03-AUG-19
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19





## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739888</b>							
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4745662</b>							
<b>WG3128733-26</b>	<b>LCS</b>							
Ammonia as N			103.0		%		85-115	09-AUG-19
<b>WG3128733-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
Batch	R4737309							
<b>WG3122762-10</b>	<b>LCS</b>							
Nitrite (as N)			102.9		%		90-110	01-AUG-19
<b>WG3122762-6</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	01-AUG-19
<b>WG3122762-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-AUG-19
<b>WG3122762-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-AUG-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4737309							
<b>WG3122762-10</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	01-AUG-19
<b>WG3122762-6</b>	<b>LCS</b>							
Nitrate (as N)			100.5		%		90-110	01-AUG-19
<b>WG3122762-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-AUG-19
<b>WG3122762-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-AUG-19
<b>ORP-CL</b>								
Batch	R4736591							
<b>WG3122214-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	01-AUG-19
<b>P-T-L-COL-CL</b>								
Batch	R4742661							
<b>WG3125799-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.3		%		80-120	07-AUG-19
<b>WG3125799-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-AUG-19
<b>PH-CL</b>								
Batch	R4738191							
<b>WG3122728-20</b>	<b>LCS</b>							
pH			7.04		pH		6.9-7.1	01-AUG-19
<b>PO4-DO-L-COL-CL</b>								



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4737938							
<b>WG3121849-19 LCS</b>								
Orthophosphate-Dissolved (as P)			103.6		%		80-120	01-AUG-19
<b>WG3121849-5 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4737309							
<b>WG3122762-10 LCS</b>								
Sulfate (SO4)			99.2		%		90-110	01-AUG-19
<b>WG3122762-6 LCS</b>								
Sulfate (SO4)			96.5		%		90-110	01-AUG-19
<b>WG3122762-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	01-AUG-19
<b>WG3122762-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	01-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4738188							
<b>WG3121447-11 LCS</b>								
Total Dissolved Solids			97.9		%		85-115	01-AUG-19
<b>WG3121447-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4744512							
<b>WG3127050-10 LCS</b>								
Total Kjeldahl Nitrogen			96.6		%		75-125	08-AUG-19
<b>WG3127050-2 LCS</b>								
Total Kjeldahl Nitrogen			99.2		%		75-125	08-AUG-19
<b>WG3127050-6 LCS</b>								
Total Kjeldahl Nitrogen			93.2		%		75-125	08-AUG-19
<b>WG3127050-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>WG3127050-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>WG3127050-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4744357							
<b>WG3125600-6</b>	<b>LCS</b>							
Total Suspended Solids			90.4		%		85-115	07-AUG-19
<b>WG3125600-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	07-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4736536							
<b>WG3122202-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	01-AUG-19
<b>WG3122202-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-AUG-19

# Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2321399

Report Date: 10-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	31-JUL-19 11:15	01-AUG-19 15:00	0.25	28	hours	EHTR-FM
	2	31-JUL-19 09:37	01-AUG-19 15:00	0.25	29	hours	EHTR-FM
pH	1	31-JUL-19 11:15	01-AUG-19 11:00	0.25	24	hours	EHTR-FM
	2	31-JUL-19 09:37	01-AUG-19 11:00	0.25	25	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2321399 were received on 01-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20190721-1220

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	neil.macdonald@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:				
Address	PO Box 100			Address	2530 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jarod.cayenne@teck.com	X	X	X
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	scott.roughend@teck.com	X	X	X
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - P: Field, L: Lab, H: Field & Lab, N: None



L2321399-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-TKN/TOC	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	N	Y	Y	Y	N	
FR_POTWELLS_QTR_2019-07-01_N	FR_POTWELLS	WG		7/31/2019	11:15	G	5	1	1	1	1	1	1					
FR_TT43_QTR_2019-07-01_N	FR_TT43	WG		7/31/2019	09:37	G	5	1	1	1	1	1	1					

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

	Cruz Canlas	July 31, 2019	DM	08/10/2019 9:00 AM
--	-------------	---------------	----	--------------------

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X	Sampler's Name	Cruz Canlas	Mobile #	250-433-6253
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	July 31, 2019
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

11°C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 01-AUG-19  
Report Date: 15-AUG-19 09:15 (MT)  
Version: FINAL REV. 2

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2321426  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20190731  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2321426-1 WG 31-JUL-19 11:37 FR_KB_2_2019- 07-31	L2321426-2 WG 31-JUL-19 13:56 FR_KB_1_2019- 07-31	L2321426-3 WG 31-JUL-19 11:42 FR_DC1-2019-07- 31	L2321426-4 WG 31-JUL-19 11:47 FR_FLD-2019-07- 31	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1160	1210	1190	<2.0
	Hardness (as CaCO3) (mg/L)	702	705	694	<0.50
	pH (pH)	8.10	8.19	8.09	5.98
	ORP (mV)	517	334	435	441
	Total Suspended Solids (mg/L)	3.7	<1.0	3.6	<1.0
	Total Dissolved Solids (mg/L)	912 <sup>DLHC</sup>	893 <sup>DLHC</sup>	895 <sup>DLHC</sup>	<10
	Turbidity (NTU)	7.85	0.29	5.51	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	16.3	6.5	15.9	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	331	371	352	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	331	371	352	<1.0
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50
	Fluoride (F) (mg/L)	0.21 <sup>DLHC</sup>	0.24 <sup>DLHC</sup>	0.20 <sup>DLHC</sup>	<0.020
	Ion Balance (%)	103	99.4	100	0.0
	Nitrate (as N) (mg/L)	28.4 <sup>DLHC</sup>	27.2 <sup>DLHC</sup>	27.9 <sup>DLHC</sup>	<0.0050
	Nitrite (as N) (mg/L)	0.0158 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0018	0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.015 <sup>DLM</sup>	<0.0020	0.0070	<0.0020
	Sulfate (SO4) (mg/L)	246 <sup>DLHC</sup>	240 <sup>DLHC</sup>	240 <sup>DLHC</sup>	<0.30
	Anion Sum (meq/L)	13.8	14.4	14.0	<0.10
	Cation Sum (meq/L)	14.2	14.3	14.1	<0.10
	Cation - Anion Balance (%)	1.6	-0.3	0.1	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.73	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	0.80	<0.50
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00035	0.00057	0.00035	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0389	0.0291	0.0392	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2321426-1	L2321426-2	L2321426-3	L2321426-4
		Description	WG	WG	WG	WG
		Sampled Date	31-JUL-19	31-JUL-19	31-JUL-19	31-JUL-19
		Sampled Time	11:37	13:56	11:42	11:47
		Client ID	FR_KB_2_2019-07-31	FR_KB_1_2019-07-31	FR_DC1-2019-07-31	FR_FLD-2019-07-31
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.025	0.027	0.024	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0700	0.392	0.0708	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		157	158	156	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	0.23	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0564	0.0557	0.0562	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		75.4	75.4	73.8	<0.10
	Manganese (Mn)-Dissolved (mg/L)		0.00086	<0.00010	0.00083	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00121	0.00189	0.00124	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00260	0.0121	0.00257	<0.00050
	Potassium (K)-Dissolved (mg/L)		3.35	3.51	3.30	<0.050
	Selenium (Se)-Dissolved (ug/L)		122	116	121	<0.050
	Silicon (Si)-Dissolved (mg/L)		2.13	2.10	2.08	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.67	2.49	2.65	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.145	0.156	0.147	<0.00020
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	0.000013	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00599	0.00604	0.00581	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0021	0.0086	0.0024	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2321426-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2321426-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2321426-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2321426-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2321426-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			

## Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190731

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739851</b>							
<b>WG3124348-12</b>	<b>DUP</b>	<b>L2321426-4</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	02-AUG-19
<b>WG3124348-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.1		%		85-115	02-AUG-19
<b>WG3124348-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	02-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4742588</b>							
<b>WG3125507-9</b>	<b>DUP</b>	<b>L2321426-3</b>						
Alkalinity, Total (as CaCO3)		352	354		mg/L	0.5	20	06-AUG-19
<b>WG3125507-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.8		%		85-115	06-AUG-19
<b>WG3125507-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739888</b>							
<b>WG3123340-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.6		%		80-120	03-AUG-19
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738008</b>							
<b>WG3122939-15</b>	<b>DUP</b>	<b>L2321426-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122939-6</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	01-AUG-19
<b>WG3122939-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-AUG-19
<b>WG3122939-16</b>	<b>MS</b>	<b>L2321426-4</b>						
Bromide (Br)			102.1		%		75-125	01-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739320</b>							
<b>WG3123901-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			109.2		%		80-120	02-AUG-19
<b>WG3123901-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch R4739320								
WG3123901-2	LCS							
Total Organic Carbon			114.3		%		80-120	02-AUG-19
WG3123901-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>CL-IC-N-CL</b>								
Batch R4738008								
WG3122939-15	DUP	L2321426-4						
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	01-AUG-19
WG3122939-6	LCS							
Chloride (Cl)			102.2		%		90-110	01-AUG-19
WG3122939-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	01-AUG-19
WG3122939-16	MS	L2321426-4						
Chloride (Cl)			102.9		%		75-125	01-AUG-19
<b>EC-L-PCT-CL</b>								
Batch R4742588								
WG3125507-9	DUP	L2321426-3						
Conductivity (@ 25C)			1190		uS/cm	0.2	10	06-AUG-19
WG3125507-8	LCS							
Conductivity (@ 25C)			98.7		%		90-110	06-AUG-19
WG3125507-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-AUG-19
<b>F-IC-N-CL</b>								
Batch R4738008								
WG3122939-15	DUP	L2321426-4						
Fluoride (F)			<0.020	RPD-NA	mg/L	N/A	20	01-AUG-19
WG3122939-6	LCS							
Fluoride (F)			102.9		%		90-110	01-AUG-19
WG3122939-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	01-AUG-19
WG3122939-16	MS	L2321426-4						
Fluoride (F)			105.0		%		75-125	01-AUG-19
<b>HG-D-CVAA-VA</b>								
Batch R4742291								
WG3125124-2	LCS							
Mercury (Hg)-Dissolved			100.2		%		80-120	07-AUG-19
WG3125124-1	MB	NP						



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4742291							
<b>WG3125124-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-AUG-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch	R4742291							
<b>WG3125400-2 LCS</b>								
Mercury (Hg)-Total			100.1		%		80-120	07-AUG-19
<b>WG3125400-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	07-AUG-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch	R4739888							
<b>WG3123340-2 LCS</b>								
Aluminum (Al)-Dissolved			89.3		%		80-120	03-AUG-19
Antimony (Sb)-Dissolved			88.6		%		80-120	03-AUG-19
Arsenic (As)-Dissolved			90.5		%		80-120	03-AUG-19
Barium (Ba)-Dissolved			92.7		%		80-120	03-AUG-19
Bismuth (Bi)-Dissolved			90.3		%		80-120	03-AUG-19
Boron (B)-Dissolved			89.2		%		80-120	03-AUG-19
Cadmium (Cd)-Dissolved			94.3		%		80-120	03-AUG-19
Calcium (Ca)-Dissolved			89.2		%		80-120	03-AUG-19
Chromium (Cr)-Dissolved			90.9		%		80-120	03-AUG-19
Cobalt (Co)-Dissolved			89.2		%		80-120	03-AUG-19
Copper (Cu)-Dissolved			90.4		%		80-120	03-AUG-19
Iron (Fe)-Dissolved			84.7		%		80-120	03-AUG-19
Lead (Pb)-Dissolved			90.6		%		80-120	03-AUG-19
Lithium (Li)-Dissolved			88.2		%		80-120	03-AUG-19
Magnesium (Mg)-Dissolved			92.5		%		80-120	03-AUG-19
Manganese (Mn)-Dissolved			89.6		%		80-120	03-AUG-19
Molybdenum (Mo)-Dissolved			89.6		%		80-120	03-AUG-19
Nickel (Ni)-Dissolved			89.1		%		80-120	03-AUG-19
Potassium (K)-Dissolved			85.8		%		80-120	03-AUG-19
Selenium (Se)-Dissolved			95.7		%		80-120	03-AUG-19
Silicon (Si)-Dissolved			93.3		%		60-140	03-AUG-19
Silver (Ag)-Dissolved			88.1		%		80-120	03-AUG-19
Sodium (Na)-Dissolved			93.1		%		80-120	03-AUG-19
Strontium (Sr)-Dissolved			90.1		%		80-120	03-AUG-19





## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739888</b>							
<b>WG3123340-2</b>	<b>LCS</b>							
Thallium (Tl)-Dissolved			88.8		%		80-120	03-AUG-19
Tin (Sn)-Dissolved			90.0		%		80-120	03-AUG-19
Titanium (Ti)-Dissolved			85.3		%		80-120	03-AUG-19
Uranium (U)-Dissolved			91.8		%		80-120	03-AUG-19
Vanadium (V)-Dissolved			89.7		%		80-120	03-AUG-19
Zinc (Zn)-Dissolved			93.1		%		80-120	03-AUG-19
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-AUG-19



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
Batch	R4739888							
<b>WG3123340-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-AUG-19
<b>NH3-L-F-CL</b>								
Batch	R4745662							
<b>WG3128733-26</b>	<b>LCS</b>							
Ammonia as N			103.0		%		85-115	09-AUG-19
<b>WG3128733-30</b>	<b>LCS</b>							
Ammonia as N			103.2		%		85-115	09-AUG-19
<b>WG3128733-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-AUG-19
<b>WG3128733-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-AUG-19
<b>NO2-L-IC-N-CL</b>								
Batch	R4738008							
<b>WG3122939-15</b>	<b>DUP</b>	<b>L2321426-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122939-6</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	01-AUG-19
<b>WG3122939-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-AUG-19
<b>WG3122939-16</b>	<b>MS</b>	<b>L2321426-4</b>						
Nitrite (as N)			101.3		%		75-125	01-AUG-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4738008							
<b>WG3122939-15</b>	<b>DUP</b>	<b>L2321426-4</b>						
Nitrate (as N)		<0.0050	0.0054	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122939-6</b>	<b>LCS</b>							
Nitrate (as N)			102.7		%		90-110	01-AUG-19
<b>WG3122939-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-AUG-19
<b>WG3122939-16</b>	<b>MS</b>	<b>L2321426-4</b>						
Nitrate (as N)			103.7		%		75-125	01-AUG-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4739043							
WG3123582-11	CRM	CL-ORP						
ORP			224		mV		210-230	02-AUG-19
Batch	R4741913							
WG3124877-1	CRM	CL-ORP						
ORP			222		mV		210-230	06-AUG-19
WG3124877-2	DUP	L2321426-3						
ORP		435	435	J	mV	0.5	15	06-AUG-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4742661							
WG3125799-7	DUP	L2321426-1						
Phosphorus (P)-Total		0.015	0.015		mg/L	0.5	20	07-AUG-19
WG3125799-6	LCS							
Phosphorus (P)-Total			114.3		%		80-120	07-AUG-19
WG3125799-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-AUG-19
WG3125799-8	MS	L2321426-1						
Phosphorus (P)-Total			114.0		%		70-130	07-AUG-19
<b>PH-CL</b>		<b>Water</b>						
Batch	R4742588							
WG3125507-9	DUP	L2321426-3						
pH		8.09	8.14	J	pH	0.05	0.2	06-AUG-19
WG3125507-8	LCS							
pH			7.01		pH		6.9-7.1	06-AUG-19
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4737938							
WG3121849-19	LCS							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	01-AUG-19
WG3121849-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-AUG-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4738008							
WG3122939-15	DUP	L2321426-4						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	01-AUG-19
WG3122939-6	LCS							
Sulfate (SO4)			101.7		%		90-110	01-AUG-19
WG3122939-5	MB							



## Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch R4738008								
WG3122939-5	MB		<0.30		mg/L		0.3	01-AUG-19
Sulfate (SO4)								
WG3122939-16	MS	L2321426-4	102.7		%		75-125	01-AUG-19
Sulfate (SO4)								
<b>SOLIDS-TDS-CL</b>								
Batch R4744354								
WG3125532-5	LCS		100.8		%		85-115	07-AUG-19
Total Dissolved Solids								
WG3125532-4	MB		<10		mg/L		10	07-AUG-19
Total Dissolved Solids								
<b>TKN-L-F-CL</b>								
Batch R4744512								
WG3127050-10	LCS		96.6		%		75-125	08-AUG-19
Total Kjeldahl Nitrogen								
WG3127050-2	LCS		99.2		%		75-125	08-AUG-19
Total Kjeldahl Nitrogen								
WG3127050-6	LCS		93.2		%		75-125	08-AUG-19
Total Kjeldahl Nitrogen								
WG3127050-1	MB		<0.050		mg/L		0.05	08-AUG-19
Total Kjeldahl Nitrogen								
WG3127050-5	MB		<0.050		mg/L		0.05	08-AUG-19
Total Kjeldahl Nitrogen								
WG3127050-9	MB		<0.050		mg/L		0.05	08-AUG-19
Total Kjeldahl Nitrogen								
<b>TSS-L-CL</b>								
Batch R4744357								
WG3125600-6	LCS		90.4		%		85-115	07-AUG-19
Total Suspended Solids								
WG3125600-5	MB		<1.0		mg/L		1	07-AUG-19
Total Suspended Solids								
<b>TURBIDITY-CL</b>								
Batch R4738854								
WG3122948-11	LCS		95.5		%		85-115	02-AUG-19
Turbidity								
WG3122948-10	MB		<0.10		NTU		0.1	02-AUG-19
Turbidity								

# Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2321426

Report Date: 15-AUG-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	31-JUL-19 11:37	02-AUG-19 15:00	0.25	51	hours	EHTR-FM
	2	31-JUL-19 13:56	02-AUG-19 15:00	0.25	49	hours	EHTR-FM
	3	31-JUL-19 11:42	06-AUG-19 08:45	0.25	141	hours	EHTR-FM
	4	31-JUL-19 11:47	06-AUG-19 08:45	0.25	141	hours	EHTR-FM
pH	1	31-JUL-19 11:37	06-AUG-19 09:00	0.25	141	hours	EHTR-FM
	2	31-JUL-19 13:56	06-AUG-19 09:00	0.25	139	hours	EHTR-FM
	3	31-JUL-19 11:42	06-AUG-19 09:00	0.25	141	hours	EHTR-FM
	4	31-JUL-19 11:47	06-AUG-19 09:00	0.25	141	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2321426 were received on 01-AUG-19 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>	<b>20190731</b>	<b>TURNAROUND TIME:</b>	Regular	<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Teck Coal	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Leilah Tate	Lab Contact	Lyudmyla Shvets	Email 1:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Email	Leilah.Tate@teck.com	Email	Lyudmyla.Shvets@ALSglobal.com	Email 2:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Address	Suite 1000, 205 - 9th Ave S.E.	Address	2559 29 Street NE	Email 3:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
City	Calgary	City	Calgary	Email 4:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Province	AB	Province	AB	Email 5:	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Postal Code	T2G 0R3	Postal Code	T1Y 7B5		
Country	Canada	Country	Canada		
Phone Number	1-604-831-3830	Phone Number	403 407 1794	PO number	VPO00597209

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	PRESERV.	FL	N	F	N	F	F	N				
								TECK COAL ROUTINE - CL	NONE											
								TECK COAL DOC	H2SO4											
								TECK COAL TOC/TKN	H2SO4											
								TECKCOAL-MET-D-CL	HNO3											
								HG-D-CVAF-CL	HCL											
								HG-T-CVAF-CL	HCL											
FR_KB_2_2019-07-31	FR_KB_2	WG	N	7/31/2019	11:37	G	6													
FR_KB_2_2019-07-31	FR_KB_1	WG	N	7/31/2019	13:56	G	6													
FR_DCI-2019-07-31	FR_DCI	WG	N	7/31/2019	11:42	G	6													
FR_FLD-2019-07-31	FR_FLD	WG	N	7/31/2019	11:47	G	6													



L2321426-COFC

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
All samples are field filtered and preserved as required.			<i>pk 8/1</i>	<i>855</i>

<b>SERVICE REQUEST (rush - subject to availability)</b>	<input checked="" type="checkbox"/> Regular (default)	<b>Sampler's Name</b>	<b>Katie Peterson</b>	<b>Mobile #</b>	<b>250-946-5029</b>
	<input type="checkbox"/> Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>		<b>Date/Time</b>	<b>July 31 2019</b>
	<input type="checkbox"/> Emergency (1 Business Day) - 100% surcharge				
	<input type="checkbox"/> For Emergency <1 Day, ASAP or Weekend - Contact ALS				

1.6°C



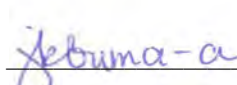
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 09-AUG-19  
Report Date: 21-AUG-19 14:58 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2325894  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20190808  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2325894-1 WG 08-AUG-19 10:15 FR_TBSSMW- 1_2019-08-08	L2325894-2 WG 08-AUG-19 10:20 FR_DC2-2019-08- 08	L2325894-3 WG 08-AUG-19 10:25 FR_FLD2-2019-08- 08	L2325894-4 WG 08-AUG-19 12:25 FR_TBSSMW- 2_2019-08-08	L2325894-5 WG 08-AUG-19 14:40 FR_LP_1A_2019- 08-08
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	365	365	<2.0	390	2880
	Hardness (as CaCO3) (mg/L)	145	147	<0.50	221	362
	pH (pH)	8.41	8.41	5.60	8.27	8.38
	ORP (mV)	324	248	481	290	255
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	16.1
	Total Dissolved Solids (mg/L)	171 <sup>DLHC</sup>	189 <sup>DLHC</sup>	<10	232 <sup>DLHC</sup>	2190 <sup>DLHC</sup>
	Turbidity (NTU)	1.0	0.95	<0.10	<0.10	18.9
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	1.3	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	175	169	<1.0	133	435
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.4	5.8	<1.0	<1.0	11.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	180	175	<1.0	133	446
	Ammonia as N (mg/L)	2.83 <sup>DLHC</sup>	2.79 <sup>RRV</sup>	0.0071 <sup>RRV</sup>	0.0082	0.109 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.74 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	0.71	0.70	<0.50	<0.50	30.4 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.407	0.412	<0.020	0.263	0.80 <sup>DLHC</sup>
	Ion Balance (%)	97.9	101	0.0	105	94.2 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	1.76	0.053 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010 <sup>DLM</sup>	<0.0010	<0.0010	0.0091 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	3.44	2.86	<0.050	0.259	0.685
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0021	<0.0010	0.0011	0.0012
	Phosphorus (P)-Total (mg/L)	0.0036	0.0043	<0.0020	<0.0020	<0.0020 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	22.9	22.9	<0.30	69.4	1120
	Anion Sum (meq/L)	4.12	4.02	<0.10	4.25	33.2
	Cation Sum (meq/L)	4.03	4.05	<0.10	4.45	31.3
	Cation - Anion Balance (%)	-1.1	0.4	0.0	2.3	-3.0
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.28	1.09	<0.50	0.93
Total Organic Carbon (mg/L)		1.71	1.30	<0.50	1.25	47.5
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0036	0.0021	<0.0010	0.0013	<0.0050 <sup>DLDS</sup>
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>
	Arsenic (As)-Dissolved (mg/L)	0.00126	0.00122	<0.00010	<0.00010	0.00453 <sup>DLDS</sup>
	Barium (Ba)-Dissolved (mg/L)	1.16 <sup>DLHC</sup>	0.945 <sup>DLHC</sup>	<0.00010	0.0561	0.0523 <sup>DLDS</sup>
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.10 <sup>DLDS</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2325894-1	L2325894-2	L2325894-3	L2325894-4	L2325894-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	08-AUG-19	08-AUG-19	08-AUG-19	08-AUG-19	08-AUG-19
		Sampled Time	10:15	10:20	10:25	12:25	14:40
		Client ID	FR_TBSSMW-1_2019-08-08	FR_DC2-2019-08-08	FR_FLD2-2019-08-08	FR_TBSSMW-2_2019-08-08	FR_LP_1A_2019-08-08
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000025 <sup>DLDS</sup>
	Boron (B)-Dissolved (mg/L)	0.011	0.011	<0.010	<0.010	0.078	0.078 <sup>DLDS</sup>
	Cadmium (Cd)-Dissolved (ug/L)	0.0062	<0.0050	<0.0050	0.0075	<0.025	<0.025 <sup>DLDS</sup>
	Calcium (Ca)-Dissolved (mg/L)	12.8	13.6	<0.050	57.6	102	102 <sup>DLDS</sup>
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00016	<0.00050	<0.00050 <sup>DLDS</sup>
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	1.17	1.17 <sup>DLDS</sup>
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.0010 <sup>DLDS</sup>
	Iron (Fe)-Dissolved (mg/L)	0.123	0.126	<0.010	<0.010	0.618	0.618 <sup>DLDS</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00025	<0.00025 <sup>DLDS</sup>
	Lithium (Li)-Dissolved (mg/L)	0.222	0.222	<0.0010	0.0077	0.0321	0.0321 <sup>DLDS</sup>
	Magnesium (Mg)-Dissolved (mg/L)	27.4	27.5	<0.0050	18.6	26.3	26.3 <sup>DLDS</sup>
	Manganese (Mn)-Dissolved (mg/L)	0.0389	0.0389	<0.00010	<0.00010	1.21	1.21 <sup>DLDS</sup>
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>
	Molybdenum (Mo)-Dissolved (mg/L)	0.0144	0.0148	<0.000050	0.000974	0.00945	0.00945 <sup>DLDS</sup>
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025 <sup>DLDS</sup>
	Potassium (K)-Dissolved (mg/L)	6.15	6.09	<0.050	0.759	4.56	4.56 <sup>DLDS</sup>
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	12.8	<0.25	<0.25 <sup>DLDS</sup>
	Silicon (Si)-Dissolved (mg/L)	2.26	2.25	<0.050	1.58	7.02	7.02 <sup>DLDS</sup>
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050 <sup>DLDS</sup>
	Sodium (Na)-Dissolved (mg/L)	17.8	17.3	<0.050	0.563	548	548 <sup>DLDS</sup>
	Strontium (Sr)-Dissolved (mg/L)	0.220	0.225	<0.00020	0.0928	0.427	0.427 <sup>DLDS</sup>
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050 <sup>DLDS</sup>
	Tin (Sn)-Dissolved (mg/L)	0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050 <sup>DLDS</sup>
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010 <sup>DLDS</sup>
	Uranium (U)-Dissolved (mg/L)	0.000170	0.000170	<0.000010	0.000926	0.0142	0.0142 <sup>DLDS</sup>
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025 <sup>DLDS</sup>
	Zinc (Zn)-Dissolved (mg/L)	0.0013	0.0012	<0.0010	<0.0010	<0.0050	<0.0050 <sup>DLDS</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)

## Reference Information

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**HG-T-CVAA-CL** Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

20190808

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4747648</b>							
<b>WG3130099-12</b>	<b>DUP</b>	<b>L2325894-4</b>						
Acidity (as CaCO3)		1.3	<1.0	RPD-NA	mg/L	N/A	20	11-AUG-19
<b>WG3130099-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.2		%		85-115	11-AUG-19
<b>WG3130099-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	11-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4747869</b>							
<b>WG3130131-15</b>	<b>DUP</b>	<b>L2325894-2</b>						
Alkalinity, Total (as CaCO3)		175	171		mg/L	2.2	20	11-AUG-19
<b>WG3130131-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.0		%		85-115	11-AUG-19
<b>WG3130131-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-AUG-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4757878</b>							
<b>WG3135448-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			86.3		%		80-120	16-AUG-19
<b>WG3135448-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-13</b>	<b>DUP</b>	<b>L2325894-3</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-AUG-19
<b>WG3129142-4</b>	<b>LCS</b>							
Bromide (Br)			100.3		%		85-115	09-AUG-19
<b>WG3129142-5</b>	<b>LCS</b>							
Bromide (Br)			99.0		%		85-115	09-AUG-19
<b>WG3129142-6</b>	<b>LCS</b>							
Bromide (Br)			97.6		%		85-115	09-AUG-19
<b>WG3129142-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-AUG-19
<b>WG3129142-2</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-AUG-19
<b>WG3129142-3</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-AUG-19
<b>WG3129142-14</b>	<b>MS</b>	<b>L2325894-3</b>						
Bromide (Br)			100.8		%		75-125	09-AUG-19



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4752762								
WG3132427-2 <b>LCS</b>								
Dissolved Organic Carbon			107.8		%		80-120	13-AUG-19
WG3132427-1 <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-AUG-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4752762								
WG3132427-2 <b>LCS</b>								
Total Organic Carbon			116.5		%		80-120	13-AUG-19
WG3132427-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	13-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch      R4745926								
WG3129142-13 <b>DUP</b> <b>L2325894-3</b>								
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	09-AUG-19
WG3129142-4 <b>LCS</b>								
Chloride (Cl)			99.3		%		90-110	09-AUG-19
WG3129142-5 <b>LCS</b>								
Chloride (Cl)			100.2		%		90-110	09-AUG-19
WG3129142-6 <b>LCS</b>								
Chloride (Cl)			99.7		%		90-110	09-AUG-19
WG3129142-1 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	09-AUG-19
WG3129142-2 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	09-AUG-19
WG3129142-3 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	09-AUG-19
WG3129142-14 <b>MS</b> <b>L2325894-3</b>								
Chloride (Cl)			102.5		%		75-125	09-AUG-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch      R4747869								
WG3130131-15 <b>DUP</b> <b>L2325894-2</b>								
Conductivity (@ 25C)			365		uS/cm	0.5	10	11-AUG-19
WG3130131-14 <b>LCS</b>								
Conductivity (@ 25C)			101.6		%		90-110	11-AUG-19
WG3130131-13 <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-13</b>	<b>DUP</b>	<b>L2325894-3</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	09-AUG-19
<b>WG3129142-4</b>	<b>LCS</b>							
Fluoride (F)			102.8		%		90-110	09-AUG-19
<b>WG3129142-5</b>	<b>LCS</b>							
Fluoride (F)			105.2		%		90-110	09-AUG-19
<b>WG3129142-6</b>	<b>LCS</b>							
Fluoride (F)			101.8		%		90-110	09-AUG-19
<b>WG3129142-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-AUG-19
<b>WG3129142-2</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-AUG-19
<b>WG3129142-3</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-AUG-19
<b>WG3129142-14</b>	<b>MS</b>	<b>L2325894-3</b>						
Fluoride (F)			106.2		%		75-125	09-AUG-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4757564</b>							
<b>WG3135097-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.0		%		80-120	16-AUG-19
<b>WG3135097-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-AUG-19
<b>HG-T-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4757564</b>							
<b>WG3135097-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.0		%		80-120	16-AUG-19
<b>WG3135097-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-AUG-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4757878</b>							
<b>WG3135448-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			93.7		%		80-120	16-AUG-19
Antimony (Sb)-Dissolved			102.6		%		80-120	16-AUG-19
Arsenic (As)-Dissolved			99.5		%		80-120	16-AUG-19
Barium (Ba)-Dissolved			93.3		%		80-120	16-AUG-19
Bismuth (Bi)-Dissolved			89.4		%		80-120	16-AUG-19
Boron (B)-Dissolved			83.2		%		80-120	16-AUG-19





## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4757878</b>							
<b>WG3135448-2</b>	<b>LCS</b>	<b>TMRM</b>						
Cadmium (Cd)-Dissolved			93.2		%		80-120	16-AUG-19
Calcium (Ca)-Dissolved			88.1		%		80-120	16-AUG-19
Chromium (Cr)-Dissolved			91.5		%		80-120	16-AUG-19
Cobalt (Co)-Dissolved			90.8		%		80-120	16-AUG-19
Copper (Cu)-Dissolved			89.9		%		80-120	16-AUG-19
Iron (Fe)-Dissolved			93.8		%		80-120	16-AUG-19
Lead (Pb)-Dissolved			89.0		%		80-120	16-AUG-19
Lithium (Li)-Dissolved			102.4		%		80-120	16-AUG-19
Magnesium (Mg)-Dissolved			92.0		%		80-120	16-AUG-19
Manganese (Mn)-Dissolved			92.5		%		80-120	16-AUG-19
Molybdenum (Mo)-Dissolved			98.0		%		80-120	16-AUG-19
Nickel (Ni)-Dissolved			91.8		%		80-120	16-AUG-19
Potassium (K)-Dissolved			92.7		%		80-120	16-AUG-19
Selenium (Se)-Dissolved			98.2		%		80-120	16-AUG-19
Silicon (Si)-Dissolved			98.4		%		60-140	16-AUG-19
Silver (Ag)-Dissolved			88.8		%		80-120	16-AUG-19
Sodium (Na)-Dissolved			87.6		%		80-120	16-AUG-19
Strontium (Sr)-Dissolved			89.9		%		80-120	16-AUG-19
Thallium (Tl)-Dissolved			87.9		%		80-120	16-AUG-19
Tin (Sn)-Dissolved			98.4		%		80-120	16-AUG-19
Titanium (Ti)-Dissolved			95.3		%		80-120	16-AUG-19
Uranium (U)-Dissolved			89.2		%		80-120	16-AUG-19
Vanadium (V)-Dissolved			92.9		%		80-120	16-AUG-19
Zinc (Zn)-Dissolved			89.3		%		80-120	16-AUG-19
<b>WG3135448-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4757878</b>							
<b>WG3135448-1</b>	<b>MB</b>							
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4756756</b>							
<b>WG3133976-18</b>	<b>LCS</b>							
Ammonia as N			102.7		%		85-115	15-AUG-19
<b>WG3133976-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	15-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-13</b>	<b>DUP</b>	<b>L2325894-3</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-AUG-19
<b>WG3129142-4</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	09-AUG-19
<b>WG3129142-5</b>	<b>LCS</b>							
Nitrite (as N)			101.0		%		90-110	09-AUG-19



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-6</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	09-AUG-19
<b>WG3129142-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-AUG-19
<b>WG3129142-2</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-AUG-19
<b>WG3129142-3</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-AUG-19
<b>WG3129142-14</b>	<b>MS</b>	<b>L2325894-3</b>						
Nitrite (as N)			104.1		%		75-125	09-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-13</b>	<b>DUP</b>	<b>L2325894-3</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	09-AUG-19
<b>WG3129142-4</b>	<b>LCS</b>							
Nitrate (as N)			99.4		%		90-110	09-AUG-19
<b>WG3129142-5</b>	<b>LCS</b>							
Nitrate (as N)			100.3		%		90-110	09-AUG-19
<b>WG3129142-6</b>	<b>LCS</b>							
Nitrate (as N)			99.96		%		90-110	09-AUG-19
<b>WG3129142-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-AUG-19
<b>WG3129142-2</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-AUG-19
<b>WG3129142-3</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-AUG-19
<b>WG3129142-14</b>	<b>MS</b>	<b>L2325894-3</b>						
Nitrate (as N)			102.8		%		75-125	09-AUG-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4757003</b>							
<b>WG3134344-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	15-AUG-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4752188</b>							
<b>WG3131682-12</b>	<b>LCS</b>							
Phosphorus (P)-Total			115.6		%		80-120	13-AUG-19
<b>WG3131682-11</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4752188</b>							
<b>WG3131682-11</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-AUG-19
<b>Batch</b>	<b>R4756836</b>							
<b>WG3133774-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.7		%		80-120	15-AUG-19
<b>WG3133774-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-AUG-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4747869</b>							
<b>WG3130131-15</b>	<b>DUP</b>	<b>L2325894-2</b>						
pH		8.41	8.41	J	pH	0.00	0.2	11-AUG-19
<b>WG3130131-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	11-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4747108</b>							
<b>WG3129256-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	10-AUG-19
<b>WG3129256-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4745926</b>							
<b>WG3129142-13</b>	<b>DUP</b>	<b>L2325894-3</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	09-AUG-19
<b>WG3129142-4</b>	<b>LCS</b>							
Sulfate (SO4)			100.2		%		90-110	09-AUG-19
<b>WG3129142-5</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	09-AUG-19
<b>WG3129142-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	09-AUG-19
<b>WG3129142-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-AUG-19
<b>WG3129142-2</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-AUG-19
<b>WG3129142-3</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-AUG-19
<b>WG3129142-14</b>	<b>MS</b>	<b>L2325894-3</b>						
Sulfate (SO4)			103.5		%		75-125	09-AUG-19



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4756634							
<b>WG3132188-14 LCS</b>								
Total Dissolved Solids			103.6		%		85-115	14-AUG-19
<b>WG3132188-5 LCS</b>								
Total Dissolved Solids			96.6		%		85-115	14-AUG-19
<b>WG3132188-13 MB</b>								
Total Dissolved Solids			<10		mg/L		10	14-AUG-19
<b>WG3132188-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	14-AUG-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4753112							
<b>WG3132527-10 LCS</b>								
Total Kjeldahl Nitrogen			84.2		%		75-125	14-AUG-19
<b>WG3132527-14 LCS</b>								
Total Kjeldahl Nitrogen			103.1		%		75-125	15-AUG-19
<b>WG3132527-16 LCS</b>								
Total Kjeldahl Nitrogen			103.2		%		75-125	15-AUG-19
<b>WG3132527-2 LCS</b>								
Total Kjeldahl Nitrogen			80.5		%		75-125	14-AUG-19
<b>WG3132527-6 LCS</b>								
Total Kjeldahl Nitrogen			80.0		%		75-125	14-AUG-19
<b>WG3132527-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-19
<b>WG3132527-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-AUG-19
<b>WG3132527-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-AUG-19
<b>WG3132527-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-19
<b>WG3132527-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4756136							
<b>WG3129982-4 LCS</b>								
Total Suspended Solids			93.9		%		85-115	14-AUG-19
<b>WG3129982-6 LCS</b>								
Total Suspended Solids			97.4		%		85-115	14-AUG-19
<b>WG3129982-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	14-AUG-19



## Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4756136							
<b>WG3129982-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	14-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4746164							
<b>WG3129344-27 DUP</b>		<b>L2325894-5</b>						
Turbidity		18.9	18.9		NTU	0.0	15	10-AUG-19
<b>WG3129344-26 LCS</b>								
Turbidity			95.5		%		85-115	10-AUG-19
<b>WG3129344-25 MB</b>								
Turbidity			<0.10		NTU		0.1	10-AUG-19

# Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2325894

Report Date: 21-AUG-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	08-AUG-19 10:15	15-AUG-19 12:30	0.25	170	hours	EHTR-FM
	2	08-AUG-19 10:20	15-AUG-19 12:30	0.25	170	hours	EHTR-FM
	3	08-AUG-19 10:25	15-AUG-19 12:30	0.25	170	hours	EHTR-FM
	4	08-AUG-19 12:25	15-AUG-19 12:30	0.25	168	hours	EHTR-FM
	5	08-AUG-19 14:40	15-AUG-19 12:30	0.25	166	hours	EHTR-FM
pH							
	1	08-AUG-19 10:15	11-AUG-19 08:00	0.25	70	hours	EHTR-FM
	2	08-AUG-19 10:20	11-AUG-19 08:00	0.25	70	hours	EHTR-FM
	3	08-AUG-19 10:25	11-AUG-19 08:00	0.25	70	hours	EHTR-FM
	4	08-AUG-19 12:25	11-AUG-19 08:00	0.25	68	hours	EHTR-FM
	5	08-AUG-19 14:40	11-AUG-19 08:00	0.25	65	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2325894 were received on 09-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190808**      TURNAROUND TIME: Regular      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00597209		

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2325894-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	ANALYSIS REQUESTED
FR_TBSSMW-1_2019-08-08	FR_TBSSMW-1	WG	N	8/8/2019	10:15	G	6	1	1	1	1	1	1	N F N F F N
FR_DC2-2019-08-08	FR_DC2	WG	N	8/8/2019	10:20	G	6	1	1	1	1	1	1	NONE H2SO4 H2SO4 HNO3 HCL HCL
FR_FLD2-2019-08-08	FR_FLD2	WG	N	8/8/2019	10:25	G	6	1	1	1	1	1	1	
FR_TBSSMW-2_2019-08-08	FR_TBSSMW-2	WG	N	8/8/2019	12:25	G	6	1	1	1	1	1	1	
FR_LP_1A_2019-08-08	FR_LP_1A	WG	N	8/8/2019	14:40	G	6	1	1	1	1	1	1	

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> All samples are field filtered and preserved as required.	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b> <i>[Signature]</i>	<b>DATE/TIME</b> 8/14 9:00
--	------------------------------------	------------------	--	-------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b> Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<b>Sampler's Name</b> Katie Peterson	<b>Mobile #</b> 250-946-5029	<b>Sampler's Signature</b> <i>[Signature]</i>	<b>Date/Time</b> August 8, 2019
--	---	---------------------------------	--	------------------------------------



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 14-AUG-19  
Report Date: 23-AUG-19 19:01 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2328940  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers:  
Legal Site Desc:

Comments: ADDITIONAL 21-AUG-19 18:42

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2328940-1 WG 13-AUG-19 09:40 FR_GCMW- 1A_2019-08-13	L2328940-2 WG 13-AUG-19 12:02 FR_GCMW- 1B_2019-08-13		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	685	751		
	Hardness (as CaCO3) (mg/L)	27.1	85.6		
	pH (pH)	8.53	8.51		
	ORP (mV)	229	451		
	Total Suspended Solids (mg/L)	7.4	1.9		
	Total Dissolved Solids (mg/L)	406 <sup>DLHC</sup>	453 <sup>DLHC</sup>		
	Turbidity (NTU)	8.96	8.15		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	329	368		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	14.2	16.4		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	343	384		
	Ammonia as N (mg/L)	0.243	0.0702		
	Bromide (Br) (mg/L)	0.126	0.144		
	Chloride (Cl) (mg/L)	18.8	16.4		
	Fluoride (F) (mg/L)	2.27	1.98		
	Ion Balance (%)	105	115		
	Nitrate (as N) (mg/L)	0.0694	0.0338		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.878	0.344		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0456	0.0061		
	Phosphorus (P)-Total (mg/L)	0.0481	0.0195		
	Sulfate (SO4) (mg/L)	1.64	15.9		
	Anion Sum (meq/L)	7.55	8.58		
	Cation Sum (meq/L)	7.94	9.86		
	Cation - Anion Balance (%)	2.5	6.9		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	3.34	6.71		
	Total Organic Carbon (mg/L)	3.42	6.87		
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	0.0036	0.0090		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00015		
	Arsenic (As)-Dissolved (mg/L)	0.00239	0.00320		
	Barium (Ba)-Dissolved (mg/L)	0.0770	0.113		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2328940-1 WG 13-AUG-19 09:40 FR_GCMW- 1A_2019-08-13	L2328940-2 WG 13-AUG-19 12:02 FR_GCMW- 1B_2019-08-13		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.180	0.098		
	Cadmium (Cd)-Dissolved (ug/L)	0.0314	0.0334		
	Calcium (Ca)-Dissolved (mg/L)	7.06	22.4		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.34		
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050		
	Iron (Fe)-Dissolved (mg/L)	0.019	0.154		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.266	0.147		
	Magnesium (Mg)-Dissolved (mg/L)	2.29	7.22		
	Manganese (Mn)-Dissolved (mg/L)	0.0701	0.296		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0431	0.0432		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00275		
	Potassium (K)-Dissolved (mg/L)	1.14	1.71		
	Selenium (Se)-Dissolved (ug/L)	0.082	0.113		
	Silicon (Si)-Dissolved (mg/L)	2.86	4.22		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	169	186		
	Strontium (Sr)-Dissolved (mg/L)	0.139	0.192		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000527	0.00133		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2328940-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2328940-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) =  $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)

## Reference Information

should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4757399</b>							
<b>WG3134788-15</b>	<b>DUP</b>	<b>L2328940-2</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	15-AUG-19
<b>WG3134788-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	15-AUG-19
<b>WG3134788-13</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	15-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758785</b>							
<b>WG3136565-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	16-AUG-19
<b>WG3136565-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758245</b>							
<b>WG3135718-3</b>	<b>DUP</b>	<b>L2328940-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	17-AUG-19
<b>WG3135718-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.7		%		80-120	17-AUG-19
<b>WG3135718-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-AUG-19
<b>WG3135718-4</b>	<b>MS</b>	<b>L2328940-1</b>						
Beryllium (Be)-Dissolved			104.4		%		70-130	17-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4759204</b>							
<b>WG3137059-6</b>	<b>LCS</b>							
Bromide (Br)			110.0		%		85-115	15-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4759750</b>							
<b>WG3137820-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.2		%		80-120	19-AUG-19
<b>WG3137820-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4759750							
<b>WG3137820-2</b>	<b>LCS</b>							
Total Organic Carbon			100.7		%		80-120	19-AUG-19
<b>WG3137820-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	19-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4759204							
<b>WG3137059-6</b>	<b>LCS</b>							
Chloride (Cl)			108.1		%		90-110	15-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4758785							
<b>WG3136565-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.5		%		90-110	16-AUG-19
<b>WG3136565-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4759204							
<b>WG3137059-6</b>	<b>LCS</b>							
Fluoride (F)			109.7		%		90-110	15-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4762020							
<b>WG3137759-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.2		%		80-120	21-AUG-19
<b>WG3137759-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4762020							
<b>WG3138690-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			98.6		%		80-120	21-AUG-19
<b>WG3138690-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	21-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4758245							
<b>WG3135718-3</b>	<b>DUP</b>	<b>L2328940-2</b>						
Aluminum (Al)-Dissolved		0.0090	0.0093		mg/L	3.3	20	17-AUG-19
Antimony (Sb)-Dissolved		0.00015	0.00014		mg/L	11	20	17-AUG-19



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758245</b>							
<b>WG3135718-3</b>	<b>DUP</b>	<b>L2328940-2</b>						
Arsenic (As)-Dissolved		0.00320	0.00325		mg/L	1.5	20	17-AUG-19
Barium (Ba)-Dissolved		0.113	0.109		mg/L	3.7	20	17-AUG-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-19
Boron (B)-Dissolved		0.098	0.098		mg/L	0.2	20	17-AUG-19
Cadmium (Cd)-Dissolved		0.0000334	0.0000338		mg/L	1.2	20	17-AUG-19
Calcium (Ca)-Dissolved		22.4	22.4		mg/L	0.2	20	17-AUG-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-19
Cobalt (Co)-Dissolved		0.00034	0.00036		mg/L	5.9	20	17-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-AUG-19
Iron (Fe)-Dissolved		0.154	0.153		mg/L	0.3	20	17-AUG-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-AUG-19
Lithium (Li)-Dissolved		0.147	0.150		mg/L	2.1	20	17-AUG-19
Magnesium (Mg)-Dissolved		7.22	7.22		mg/L	0.0	20	17-AUG-19
Manganese (Mn)-Dissolved		0.296	0.297		mg/L	0.3	20	17-AUG-19
Molybdenum (Mo)-Dissolved		0.0432	0.0424		mg/L	1.9	20	17-AUG-19
Nickel (Ni)-Dissolved		0.00275	0.00273		mg/L	0.9	20	17-AUG-19
Potassium (K)-Dissolved		1.71	1.69		mg/L	1.0	20	17-AUG-19
Silicon (Si)-Dissolved		4.22	4.29		mg/L	1.7	20	17-AUG-19
Sodium (Na)-Dissolved		186	184		mg/L	1.2	20	17-AUG-19
Strontium (Sr)-Dissolved		0.192	0.190		mg/L	0.8	20	17-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-AUG-19
Uranium (U)-Dissolved		0.00133	0.00135		mg/L	1.3	20	17-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-AUG-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	17-AUG-19
<b>WG3135718-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.6		%		80-120	17-AUG-19
Antimony (Sb)-Dissolved			99.7		%		80-120	17-AUG-19
Arsenic (As)-Dissolved			99.6		%		80-120	17-AUG-19
Barium (Ba)-Dissolved			103.8		%		80-120	17-AUG-19
Bismuth (Bi)-Dissolved			109.0		%		80-120	17-AUG-19
Boron (B)-Dissolved			90.6		%		80-120	17-AUG-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	17-AUG-19



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758245</b>							
<b>WG3135718-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			98.3		%		80-120	17-AUG-19
Chromium (Cr)-Dissolved			98.4		%		80-120	17-AUG-19
Cobalt (Co)-Dissolved			98.7		%		80-120	17-AUG-19
Copper (Cu)-Dissolved			98.6		%		80-120	17-AUG-19
Iron (Fe)-Dissolved			91.7		%		80-120	17-AUG-19
Lead (Pb)-Dissolved			101.2		%		80-120	17-AUG-19
Lithium (Li)-Dissolved			100.7		%		80-120	17-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	17-AUG-19
Manganese (Mn)-Dissolved			101.5		%		80-120	17-AUG-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	17-AUG-19
Nickel (Ni)-Dissolved			98.2		%		80-120	17-AUG-19
Potassium (K)-Dissolved			96.0		%		80-120	17-AUG-19
Selenium (Se)-Dissolved			101.0		%		80-120	17-AUG-19
Silicon (Si)-Dissolved			99.2		%		60-140	17-AUG-19
Silver (Ag)-Dissolved			100.8		%		80-120	17-AUG-19
Sodium (Na)-Dissolved			102.9		%		80-120	17-AUG-19
Strontium (Sr)-Dissolved			102.1		%		80-120	17-AUG-19
Thallium (Tl)-Dissolved			102.0		%		80-120	17-AUG-19
Tin (Sn)-Dissolved			102.3		%		80-120	17-AUG-19
Titanium (Ti)-Dissolved			97.3		%		80-120	17-AUG-19
Uranium (U)-Dissolved			103.0		%		80-120	17-AUG-19
Vanadium (V)-Dissolved			102.8		%		80-120	17-AUG-19
Zinc (Zn)-Dissolved			99.6		%		80-120	17-AUG-19
<b>WG3135718-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758245</b>							
<b>WG3135718-1</b>	<b>MB</b>	<b>NP</b>						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-AUG-19
<b>WG3135718-4</b>	<b>MS</b>	<b>L2328940-1</b>						
Aluminum (Al)-Dissolved			110.0		%		70-130	17-AUG-19
Antimony (Sb)-Dissolved			102.4		%		70-130	17-AUG-19
Arsenic (As)-Dissolved			118.8		%		70-130	17-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	17-AUG-19
Bismuth (Bi)-Dissolved			97.3		%		70-130	17-AUG-19
Boron (B)-Dissolved			N/A	MS-B	%		-	17-AUG-19
Cadmium (Cd)-Dissolved			103.9		%		70-130	17-AUG-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	17-AUG-19
Chromium (Cr)-Dissolved			106.5		%		70-130	17-AUG-19
Cobalt (Co)-Dissolved			107.2		%		70-130	17-AUG-19
Copper (Cu)-Dissolved			104.7		%		70-130	17-AUG-19
Iron (Fe)-Dissolved			98.6		%		70-130	17-AUG-19
Lead (Pb)-Dissolved			97.3		%		70-130	17-AUG-19



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4758245</b>							
<b>WG3135718-4</b>	<b>MS</b>	<b>L2328940-1</b>						
Lithium (Li)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Manganese (Mn)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Molybdenum (Mo)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Nickel (Ni)-Dissolved			104.3		%		70-130	17-AUG-19
Potassium (K)-Dissolved			109.0		%		70-130	17-AUG-19
Selenium (Se)-Dissolved			120.4		%		70-130	17-AUG-19
Silicon (Si)-Dissolved			97.6		%		70-130	17-AUG-19
Silver (Ag)-Dissolved			89.9		%		70-130	17-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Strontium (Sr)-Dissolved			N/A	MS-B	%	-		17-AUG-19
Thallium (Tl)-Dissolved			97.0		%		70-130	17-AUG-19
Tin (Sn)-Dissolved			100.8		%		70-130	17-AUG-19
Titanium (Ti)-Dissolved			107.9		%		70-130	17-AUG-19
Uranium (U)-Dissolved			102.9		%		70-130	17-AUG-19
Vanadium (V)-Dissolved			113.0		%		70-130	17-AUG-19
Zinc (Zn)-Dissolved			111.3		%		70-130	17-AUG-19
<b>Batch</b>	<b>R4759172</b>							
<b>WG3135718-3</b>	<b>DUP</b>	<b>L2328940-2</b>						
Selenium (Se)-Dissolved		0.000113	0.000090	J	mg/L	0.000023	0.0001	18-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4762529</b>							
<b>WG3138868-6</b>	<b>LCS</b>							
Ammonia as N			101.0		%		85-115	20-AUG-19
<b>WG3138868-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4759204</b>							
<b>WG3137059-6</b>	<b>LCS</b>							
Nitrite (as N)			100.0		%		90-110	15-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4759204							
<b>WG3137059-6</b>	<b>LCS</b>							
Nitrate (as N)			107.9		%		90-110	15-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4761743							
<b>WG3138457-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	20-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4761290							
<b>WG3138066-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.1		%		80-120	20-AUG-19
<b>WG3138066-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4758785							
<b>WG3136565-2</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	16-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4757442							
<b>WG3132956-12</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.1		%		80-120	14-AUG-19
<b>WG3132956-4</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4759204							
<b>WG3137059-6</b>	<b>LCS</b>							
Sulfate (SO4)			105.0		%		90-110	15-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4758961							
<b>WG3136102-14</b>	<b>LCS</b>							
Total Dissolved Solids			96.1		%		85-115	18-AUG-19
<b>WG3136102-13</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767149</b>							
<b>WG3141709-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.1		%		75-125	23-AUG-19
<b>WG3141709-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.5		%		75-125	23-AUG-19
<b>WG3141709-26</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.7		%		75-125	23-AUG-19
<b>WG3141709-30</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.6		%		75-125	23-AUG-19
<b>WG3141709-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-19
<b>WG3141709-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-19
<b>WG3141709-25</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-19
<b>WG3141709-29</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4759948</b>							
<b>WG3136769-6</b>	<b>LCS</b>							
Total Suspended Solids			97.8		%		85-115	19-AUG-19
<b>WG3136769-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4756999</b>							
<b>WG3134338-14</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	15-AUG-19
<b>WG3134338-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-AUG-19

# Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2328940

Report Date: 23-AUG-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	13-AUG-19 09:40	20-AUG-19 13:35	0.25	172	hours	EHTR-FM
	2	13-AUG-19 12:02	20-AUG-19 13:35	0.25	169	hours	EHTR-FM
pH	1	13-AUG-19 09:40	16-AUG-19 12:00	0.25	74	hours	EHTR-FM
	2	13-AUG-19 12:02	16-AUG-19 12:00	0.25	72	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2328940 were received on 14-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID:

TURNAROUND TIME:

Regulu

RUSH:

PROJECT/CLIENT/USE

LABORATORY

OTHER INFO

Facility Name / Job#	Teck Coal		
Project Manager	Leilah Tate		
Email	Leilah.Tate@teck.com		
Address	Suite 1000, 205 - 9th Ave S.E.		
City	Calgary	Province	AB
Postal Code	T2G 0R3	Country	Canada
Phone Number	1-604-831-3830		

Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Lab Contact	Lyudmyla Shvets		Email 1:	X	X	X
Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	X	X	X
Address	2559 29 Street NE		Email 3:	Tom Jaffer teckcoal.com X X X		
City	Calgary	Province	AB			
Postal Code	T1Y 7B5	Country	Canada			
Phone Number	403 407 1794		PO number	VPO00597209		

SAMPLE DETAILS

ANALYSIS REQUESTED



L2328940-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
FR GCNW-1A-2019-05-13	FR GCNW-1A	WG	N	Aug 13/19	9:40	G	6
FR GCNW-1B-2019-08-13	FR GCNW-1B	WG	N	Aug 13/19	12:02	G	6
		WG				G	
		WG				G	
		WG				G	
		WG				G	
		WG				G	
		WG				G	
		WG				G	
		WG				G	

ANALYSIS	ANALYSIS REQUESTED										
	NONE	H2SO4	H2SO4	HNO3	HNO3	HNO3					
TECK COAL ROUTINE - CL	✓										
TECK COAL DOC	✓										
TECK COAL TOC	✓										
TECKCOAL-MET-D-CL											
HG-D-CVAF-CL											
HG-T-CVAF-CL											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

REFERENCES BY AFFILIATION

DATE/TIME

ACQUIRED BY/AFFILIATION

DATE/TIME

*[Signature]* 8/14 9:00

SERVICE REQUEST (rush subject to availability)

Regular (default) X

Sampler's Name

*[Signature]*

Mobile #

*[Signature]*



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 04-OCT-19  
Report Date: 13-OCT-19 16:16 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2360158  
Project P.O. #: VPO00632083  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 10/03/2019  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2360158-1 WG 03-OCT-19 09:15 FR_TB-2B-2019- 10-03	L2360158-2 WG 03-OCT-19 10:30 FR_TB-2A-2019- 10-03	L2360158-3 WG 03-OCT-19 10:35 FR_DC2-2019-10- 03	L2360158-4 WG 03-OCT-19 13:00 FR_CB-1A-2019- 10-03	L2360158-5 WG 03-OCT-19 12:00 FR_CB-1B-2019- 10-03
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	385	898	880	585	577
	Hardness (as CaCO3) (mg/L)	216	494	492	286	292
	pH (pH)	8.22	8.01	8.02	8.25	8.30
	ORP (mV)	389	105	43.7	69.6	166
	Total Suspended Solids (mg/L)	<1.0	4.9	7.4	3.2	4.4
	Total Dissolved Solids (mg/L)	255 <sup>DLHC</sup>	490 <sup>DLHC</sup>	493 <sup>DLHC</sup>	330 <sup>DLHC</sup>	322 <sup>DLHC</sup>
	Turbidity (NTU)	0.12	7.26	6.64	9.57	18.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.4	27.7	27.4	6.5	3.8
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	150	542	528	278	267
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	150	542	528	278	267
	Ammonia as N (mg/L)	<0.0050	4.71 <sup>DLHC</sup>	4.79 <sup>DLHC</sup>	1.01 <sup>DLHC</sup>	1.21 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)	<0.50	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	38.3	39.1
	Fluoride (F) (mg/L)	0.167	0.35 <sup>DLHC</sup>	0.34 <sup>DLHC</sup>	0.413	0.407
	Ion Balance (%)	101	98.1 <sup>DLHC</sup>	101 <sup>DLHC</sup>	98.8	105
	Nitrate (as N) (mg/L)	1.14	0.139 <sup>DLHC</sup>	0.040 <sup>DLHC</sup>	0.0105	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.252	4.63 <sup>HTD</sup>	4.55 <sup>HTD</sup>	1.21	1.13
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	<0.0010 <sup>DLM</sup>	0.0027 <sup>DLM</sup>	<0.0010 <sup>DLM</sup>	<0.0010 <sup>DLM</sup>
	Phosphorus (P)-Total (mg/L)	<0.0020	0.013 <sup>DLHC</sup>	0.012 <sup>DLHC</sup>	0.015	0.012
	Sulfate (SO4) (mg/L)	60.0	<1.5	<1.5	0.97	<0.30
	Anion Sum (meq/L)	4.33	10.9	10.6	6.68	6.46
	Cation Sum (meq/L)	4.37	10.7	10.6	6.60	6.75
	Cation - Anion Balance (%)	0.5	-0.9	0.3	-0.6	2.2
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	1.47
Total Organic Carbon (mg/L)		<0.50	<0.50	<0.50	1.45	1.50
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00035	0.00036	0.00026	0.00031
	Barium (Ba)-Dissolved (mg/L)	0.0798	9.74	9.95	4.38	4.43
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2360158-6 WG 03-OCT-19 15:00 FR_GCMW-1B			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	728			
	Hardness (as CaCO3) (mg/L)	82.3			
	pH (pH)	8.55			
	ORP (mV)	193			
	Total Suspended Solids (mg/L)	1.3			
	Total Dissolved Solids (mg/L)	442	DLHC		
	Turbidity (NTU)	4.90			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	370			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	20.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	390			
	Ammonia as N (mg/L)	0.0769			
	Bromide (Br) (mg/L)	0.102			
	Chloride (Cl) (mg/L)	13.0			
	Fluoride (F) (mg/L)	1.57			
	Ion Balance (%)	98.4			
	Nitrate (as N) (mg/L)	0.0081			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.361			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0087			
	Phosphorus (P)-Total (mg/L)	0.025	DLM		
	Sulfate (SO4) (mg/L)	9.91			
	Anion Sum (meq/L)	8.45			
	Cation Sum (meq/L)	8.32			
	Cation - Anion Balance (%)	-0.8			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	7.02			
	Total Organic Carbon (mg/L)	6.52			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0108			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00292			
	Barium (Ba)-Dissolved (mg/L)	0.101			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

13-OCT-19 16:16 (MT)

Version: FINAL

		Sample ID	L2360158-1	L2360158-2	L2360158-3	L2360158-4	L2360158-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	03-OCT-19	03-OCT-19	03-OCT-19	03-OCT-19	03-OCT-19
		Sampled Time	09:15	10:30	10:35	13:00	12:00
		Client ID	FR_TB-2B-2019-10-03	FR_TB-2A-2019-10-03	FR_DC2-2019-10-03	FR_CB-1A-2019-10-03	FR_CB-1B-2019-10-03
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	0.031	0.033	0.031	0.031
	Cadmium (Cd)-Dissolved (ug/L)		0.0140	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		57.5	122	121	66.2	68.0
	Chromium (Cr)-Dissolved (mg/L)		0.00012	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00092	<0.00020	<0.00020	<0.00020	0.00025
	Iron (Fe)-Dissolved (mg/L)		<0.010	1.32	1.33	1.52	1.48
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0057	0.797	0.764	0.123	0.118
	Magnesium (Mg)-Dissolved (mg/L)		17.7	45.9	46.2	29.4	29.6
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	0.0387	0.0391	0.0229	0.0173
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000388	0.000069	0.000073	0.00172	0.00186
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		0.438	16.5	16.7	3.52	3.49
	Selenium (Se)-Dissolved (ug/L)		9.66	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)		2.19	3.27	3.28	3.61	3.41
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000020 <sup>DLM</sup>	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.808	6.75	6.78	16.3	15.3
	Strontium (Sr)-Dissolved (mg/L)		0.113	0.600	0.603	0.859	0.850
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000468	0.000013	0.000013	0.000039	0.000045
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0048	0.0048	0.0031	0.0023

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2360158-6 WG 03-OCT-19 15:00 FR_GCMW-1B			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.082			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	21.8			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.26			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.162			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0942			
	Magnesium (Mg)-Dissolved (mg/L)	6.74			
	Manganese (Mn)-Dissolved (mg/L)	0.286			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0411			
	Nickel (Ni)-Dissolved (mg/L)	0.00184			
	Potassium (K)-Dissolved (mg/L)	1.58			
	Selenium (Se)-Dissolved (ug/L)	0.140			
	Silicon (Si)-Dissolved (mg/L)	4.41			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	152			
	Strontium (Sr)-Dissolved (mg/L)	0.162			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000822			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2360158-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			



## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking			

## Reference Information

Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

10/03/2019

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4861462</b>							
<b>WG3184877-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.6		%		85-115	07-OCT-19
<b>WG3184877-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4862637</b>							
<b>WG3186210-9</b>	<b>DUP</b>	<b>L2360158-5</b>						
Alkalinity, Total (as CaCO3)		267	268		mg/L	0.6	20	08-OCT-19
<b>WG3186210-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	08-OCT-19
<b>WG3186210-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4863413</b>							
<b>WG3185185-3</b>	<b>DUP</b>	<b>L2360158-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3185185-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.6		%		80-120	09-OCT-19
<b>WG3185185-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-OCT-19
<b>WG3185185-4</b>	<b>MS</b>	<b>L2360158-2</b>						
Beryllium (Be)-Dissolved			98.0		%		70-130	09-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4861940</b>							
<b>WG3185654-6</b>	<b>LCS</b>							
Bromide (Br)			101.6		%		85-115	05-OCT-19
<b>WG3185654-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4868329</b>							
<b>WG3190265-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.5		%		80-120	12-OCT-19
<b>WG3190265-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4868329							
<b>WG3190265-2</b>	<b>LCS</b>							
Total Organic Carbon			105.3		%		80-120	12-OCT-19
<b>WG3190265-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-OCT-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4861940							
<b>WG3185654-6</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		90-110	05-OCT-19
<b>WG3185654-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	05-OCT-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4862637							
<b>WG3186210-9</b>	<b>DUP</b>	<b>L2360158-5</b>						
Conductivity (@ 25C)		577	572		uS/cm	0.9	10	08-OCT-19
<b>WG3186210-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.5		%		90-110	08-OCT-19
<b>WG3186210-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-OCT-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4861940							
<b>WG3185654-6</b>	<b>LCS</b>							
Fluoride (F)			106.6		%		90-110	05-OCT-19
<b>WG3185654-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-OCT-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4862230							
<b>WG3186050-11</b>	<b>DUP</b>	<b>L2360158-3</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3186050-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.4		%		80-120	09-OCT-19
<b>WG3186050-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	09-OCT-19
<b>WG3186050-12</b>	<b>MS</b>	<b>L2360158-4</b>						
Mercury (Hg)-Dissolved			106.5		%		70-130	09-OCT-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4862227</b>							
<b>WG3186041-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.8		%		80-120	09-OCT-19
<b>WG3186041-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000050		mg/L		0.000005	09-OCT-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4863413</b>							
<b>WG3185185-3</b>	<b>DUP</b>	<b>L2360158-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	09-OCT-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-OCT-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-OCT-19
Barium (Ba)-Dissolved		0.0798	0.0795		mg/L	0.3	20	09-OCT-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-OCT-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-OCT-19
Cadmium (Cd)-Dissolved		0.0000140	0.0000096	J	mg/L	0.000004	0.00001	09-OCT-19
Calcium (Ca)-Dissolved		57.5	55.7		mg/L	3.3	20	09-OCT-19
Chromium (Cr)-Dissolved		0.00012	0.00012		mg/L	2.2	20	09-OCT-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-OCT-19
Copper (Cu)-Dissolved		0.00092	0.00088		mg/L	5.0	20	09-OCT-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-OCT-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-OCT-19
Lithium (Li)-Dissolved		0.0057	0.0055		mg/L	4.1	20	09-OCT-19
Magnesium (Mg)-Dissolved		17.7	17.9		mg/L	1.3	20	09-OCT-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-OCT-19
Molybdenum (Mo)-Dissolved		0.000388	0.000371		mg/L	4.3	20	09-OCT-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-OCT-19
Potassium (K)-Dissolved		0.438	0.430		mg/L	1.9	20	09-OCT-19
Selenium (Se)-Dissolved		0.00966	0.00968		mg/L	0.3	20	09-OCT-19
Silicon (Si)-Dissolved		2.19	1.99		mg/L	9.5	20	09-OCT-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-OCT-19
Sodium (Na)-Dissolved		0.808	0.802		mg/L	0.8	20	09-OCT-19
Strontium (Sr)-Dissolved		0.113	0.111		mg/L	1.1	20	09-OCT-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-OCT-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-OCT-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	09-OCT-19
Uranium (U)-Dissolved		0.000468	0.000481		mg/L	2.8	20	09-OCT-19



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4863413</b>							
<b>WG3185185-3</b>	<b>DUP</b>	<b>L2360158-1</b>						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-OCT-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3185185-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.5		%		80-120	09-OCT-19
Antimony (Sb)-Dissolved			95.9		%		80-120	09-OCT-19
Arsenic (As)-Dissolved			96.5		%		80-120	09-OCT-19
Barium (Ba)-Dissolved			95.2		%		80-120	09-OCT-19
Bismuth (Bi)-Dissolved			91.8		%		80-120	09-OCT-19
Boron (B)-Dissolved			89.1		%		80-120	09-OCT-19
Cadmium (Cd)-Dissolved			91.1		%		80-120	09-OCT-19
Calcium (Ca)-Dissolved			93.6		%		80-120	09-OCT-19
Chromium (Cr)-Dissolved			96.5		%		80-120	09-OCT-19
Cobalt (Co)-Dissolved			96.4		%		80-120	09-OCT-19
Copper (Cu)-Dissolved			95.5		%		80-120	09-OCT-19
Iron (Fe)-Dissolved			99.3		%		80-120	09-OCT-19
Lead (Pb)-Dissolved			92.7		%		80-120	09-OCT-19
Lithium (Li)-Dissolved			86.5		%		80-120	09-OCT-19
Magnesium (Mg)-Dissolved			98.9		%		80-120	09-OCT-19
Manganese (Mn)-Dissolved			97.8		%		80-120	09-OCT-19
Molybdenum (Mo)-Dissolved			96.1		%		80-120	09-OCT-19
Nickel (Ni)-Dissolved			97.9		%		80-120	09-OCT-19
Potassium (K)-Dissolved			96.4		%		80-120	09-OCT-19
Selenium (Se)-Dissolved			97.8		%		80-120	09-OCT-19
Silicon (Si)-Dissolved			101.8		%		60-140	09-OCT-19
Silver (Ag)-Dissolved			94.8		%		80-120	09-OCT-19
Sodium (Na)-Dissolved			96.3		%		80-120	09-OCT-19
Strontium (Sr)-Dissolved			96.2		%		80-120	09-OCT-19
Thallium (Tl)-Dissolved			88.7		%		80-120	09-OCT-19
Tin (Sn)-Dissolved			96.9		%		80-120	09-OCT-19
Titanium (Ti)-Dissolved			88.0		%		80-120	09-OCT-19
Uranium (U)-Dissolved			88.8		%		80-120	09-OCT-19
Vanadium (V)-Dissolved			98.4		%		80-120	09-OCT-19
Zinc (Zn)-Dissolved			98.4		%		80-120	09-OCT-19
<b>WG3185185-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-OCT-19



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4863413</b>							
<b>WG3185185-1</b>	<b>MB</b>	<b>NP</b>						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-OCT-19
<b>WG3185185-4</b>	<b>MS</b>	<b>L2360158-2</b>						
Aluminum (Al)-Dissolved			104.8		%		70-130	09-OCT-19
Antimony (Sb)-Dissolved			106.9		%		70-130	09-OCT-19
Arsenic (As)-Dissolved			106.9		%		70-130	09-OCT-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	09-OCT-19



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4863413</b>							
<b>WG3185185-4</b>	<b>MS</b>	<b>L2360158-2</b>						
Bismuth (Bi)-Dissolved			89.6		%		70-130	09-OCT-19
Boron (B)-Dissolved			100.3		%		70-130	09-OCT-19
Cadmium (Cd)-Dissolved			98.0		%		70-130	09-OCT-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Chromium (Cr)-Dissolved			99.1		%		70-130	09-OCT-19
Cobalt (Co)-Dissolved			95.4		%		70-130	09-OCT-19
Copper (Cu)-Dissolved			93.9		%		70-130	09-OCT-19
Iron (Fe)-Dissolved			95.7		%		70-130	09-OCT-19
Lead (Pb)-Dissolved			94.0		%		70-130	09-OCT-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Molybdenum (Mo)-Dissolved			99.5		%		70-130	09-OCT-19
Nickel (Ni)-Dissolved			95.0		%		70-130	09-OCT-19
Potassium (K)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Selenium (Se)-Dissolved			115.0		%		70-130	09-OCT-19
Silicon (Si)-Dissolved			97.5		%		70-130	09-OCT-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	09-OCT-19
Thallium (Tl)-Dissolved			92.4		%		70-130	09-OCT-19
Tin (Sn)-Dissolved			101.9		%		70-130	09-OCT-19
Titanium (Ti)-Dissolved			97.3		%		70-130	09-OCT-19
Uranium (U)-Dissolved			95.4		%		70-130	09-OCT-19
Vanadium (V)-Dissolved			101.8		%		70-130	09-OCT-19
Zinc (Zn)-Dissolved			96.8		%		70-130	09-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4862062</b>							
<b>WG3185662-23</b>	<b>DUP</b>	<b>L2360158-1</b>						
Ammonia as N			<0.0050	RPD-NA	mg/L	N/A	20	08-OCT-19
<b>WG3185662-22</b>	<b>LCS</b>							
Ammonia as N			105.7		%		85-115	08-OCT-19
<b>WG3185662-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	08-OCT-19
<b>WG3185662-24</b>	<b>MS</b>	<b>L2360158-1</b>						
Ammonia as N			98.6		%		75-125	08-OCT-19





## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4861940							
<b>WG3185654-6</b>	<b>LCS</b>							
Nitrite (as N)			101.0		%		90-110	05-OCT-19
<b>WG3185654-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-OCT-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4861940							
<b>WG3185654-6</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	05-OCT-19
<b>WG3185654-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4859627							
<b>WG3182799-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	04-OCT-19
<b>WG3182799-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	04-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4860973							
<b>WG3184282-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.2		%		80-120	07-OCT-19
<b>WG3184282-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4862637							
<b>WG3186210-9</b>	<b>DUP</b>	<b>L2360158-5</b>						
pH		8.30	8.30	J	pH	0.00	0.2	08-OCT-19
<b>WG3186210-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	08-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4859624							
<b>WG3182767-26</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			105.3		%		80-120	04-OCT-19
<b>WG3182767-30</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	04-OCT-19
<b>WG3182767-25</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-OCT-19
<b>WG3182767-29</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4859624							
<b>WG3182767-29 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	04-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4861940							
<b>WG3185654-6 LCS</b>								
Sulfate (SO4)			99.7		%		90-110	05-OCT-19
<b>WG3185654-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	05-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4862929							
<b>WG3183722-14 LCS</b>								
Total Dissolved Solids			98.2		%		85-115	07-OCT-19
<b>WG3183722-13 MB</b>								
Total Dissolved Solids			<10		mg/L		10	07-OCT-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4860985							
<b>WG3184107-10 LCS</b>								
Total Kjeldahl Nitrogen			92.1		%		75-125	07-OCT-19
<b>WG3184107-14 LCS</b>								
Total Kjeldahl Nitrogen			91.2		%		75-125	07-OCT-19
<b>WG3184107-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-19
<b>WG3184107-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-OCT-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4861987							
<b>WG3183929-4 LCS</b>								
Total Suspended Solids			93.1		%		85-115	07-OCT-19
<b>WG3183929-6 LCS</b>								
Total Suspended Solids			99.9		%		85-115	07-OCT-19
<b>WG3183929-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	07-OCT-19
<b>WG3183929-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	07-OCT-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4859598</b>							
<b>WG3182235-9</b>	<b>DUP</b>	<b>L2360158-6</b>						
Turbidity		4.90	4.88		NTU	0.4	15	04-OCT-19
<b>WG3182235-5</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	04-OCT-19
<b>WG3182235-8</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	04-OCT-19
<b>WG3182235-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-OCT-19
<b>WG3182235-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	04-OCT-19

# Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2360158

Report Date: 13-OCT-19

Page 11 of 11

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	03-OCT-19 09:15	04-OCT-19 15:15	0.25	30	hours	EHTR-FM
	2	03-OCT-19 10:30	04-OCT-19 15:15	0.25	29	hours	EHTR-FM
	3	03-OCT-19 10:35	04-OCT-19 15:15	0.25	29	hours	EHTR-FM
	4	03-OCT-19 13:00	04-OCT-19 15:15	0.25	26	hours	EHTR-FM
	5	03-OCT-19 12:00	04-OCT-19 15:15	0.25	27	hours	EHTR-FM
	6	03-OCT-19 15:00	04-OCT-19 15:15	0.25	24	hours	EHTR-FM
pH							
	1	03-OCT-19 09:15	08-OCT-19 10:00	0.25	121	hours	EHTR-FM
	2	03-OCT-19 10:30	08-OCT-19 10:00	0.25	120	hours	EHTR-FM
	3	03-OCT-19 10:35	08-OCT-19 10:00	0.25	120	hours	EHTR-FM
	4	03-OCT-19 13:00	08-OCT-19 10:00	0.25	117	hours	EHTR-FM
	5	03-OCT-19 12:00	08-OCT-19 10:00	0.25	118	hours	EHTR-FM
	6	03-OCT-19 15:00	08-OCT-19 10:00	0.25	115	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	2	03-OCT-19 10:30	07-OCT-19 18:00	3	4	days	EHT
	3	03-OCT-19 10:35	07-OCT-19 18:00	3	4	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

**Notes\*:**

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2360158 were received on 04-OCT-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **10/3/2019**      TURNAROUND TIME: **Regular**      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	Leilah.Tate@teck.com	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	tom.jeffery@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	tom.jeffery@teck.com	X	X	X
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00632083			

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2360158-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	N	F	F	N			
FR_TB-2B-2019-10-03	FR_TB-2B	WG	N	10/3/2019	9:15	G	6	1	1	1		1	1		1							
FR_TB-2A-2019-10-03	FR_TB-2A	WG	N	10/3/2019	10:30	G	6	1	1	1		1	1		1							
FR_DC2-2019-10-03	FR_DC2	WG	N	10/3/2019	10:35	G	6	1	1	1		1	1		1							
FR_CB-1A-2019-10-03	FR_CB-1A	WG	N	10/3/2019	13:00	G	6	1	1	1		1	1		1							
FR_CB-1B-2019-10-03	FR_CB-1B	WG	N	10/3/2019	12:00	G	6	1	1	1		1	1		1							
FR_GCMW-1B	FR_GCMW-1B	WG	N	10/3/2019	15:00	G	6	1	1	1		1	1		1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>AK</i>	10/4 09:40

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin		Mobile # 250-464-5914
Sampler's Signature			Date/Time October 3, 2019

*70*



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 08-OCT-19  
Report Date: 28-OCT-19 16:18 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2362173  
Project P.O. #: VPO00632083  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 10/7/2019  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2362173-1 WG 07-OCT-19 13:00 FR_TB-1A- 2019_10_07	L2362173-2 WG 07-OCT-19 11:05 FR_TB-1B-2019- 10-07	L2362173-3 WG 07-OCT-19 09:35 FR_FLD-2019-10- 07	L2362173-4 WG 07-OCT-19 11:10 FR_DC3- 2019_10_07	L2362173-5 WG 07-OCT-19 11:15 FR_TBSSMW1- 2019_10_07
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	905	470	<2.0	343	335
	Hardness (as CaCO3) (mg/L)	487	260	<0.50	145	146
	pH (pH)	8.08	8.39	5.51	8.46	8.45
	ORP (mV)	283	348	291	234	330
	Total Suspended Solids (mg/L)	50.6	<1.0	<1.0	<1.0	1.2
	Total Dissolved Solids (mg/L)	635 <sup>DLHC</sup>	300 <sup>DLHC</sup>	<10	177 <sup>DLHC</sup>	173 <sup>DLHC</sup>
	Turbidity (NTU)	49.4	0.15	<0.10	1.06	1.06
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	30.8	<1.0	1.5	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	564	145	<1.0	137	165
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	8.4	<1.0	37.4	20.6
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	564	154	<1.0	175	185
	Ammonia as N (mg/L)	5.78 <sup>DLHC</sup>	<0.0050	0.0070 <sup>RRV</sup>	2.94 <sup>DLHC</sup>	2.98 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<0.50	<0.50	0.70	0.64
	Fluoride (F) (mg/L)	0.47 <sup>DLHC</sup>	0.238	<0.020	0.441	0.431
	Ion Balance (%)	119	93.6	0.0	101	
	Nitrate (as N) (mg/L)	0.093 <sup>DLHC</sup>	2.52	<0.0050	0.0073	0.0072
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	4.94 <sup>DLHC</sup>	0.212 <sup>TKNI</sup>	<0.050	2.74	2.78
	Orthophosphate-Dissolved (as P) (mg/L)	0.0560 <sup>RRV</sup>	0.0029	<0.0010	0.0021	0.0013 <sup>RRV</sup>
	Phosphorus (P)-Total (mg/L)	0.065 <sup>DLM</sup>	0.0026	<0.0020	0.0051	0.0045 <sup>RRV</sup>
	Sulfate (SO4) (mg/L)	3.7 <sup>DLHC</sup>	112	<0.30	22.1	21.6
	Anion Sum (meq/L)	11.4	5.59	<0.10	4.00	4.19
	Cation Sum (meq/L)	13.5	5.23	<0.10	4.05	4.09
	Cation - Anion Balance (%)	8.5	-3.3	0.0	0.6	-1.3
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.64	0.67	<0.50	1.38
Total Organic Carbon (mg/L)		2.43	0.83	<0.50	1.38	1.16
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00063	<0.00010	<0.00010	0.00130	0.00129
	Barium (Ba)-Dissolved (mg/L)	16.1	0.0523	<0.00010	1.84	1.83
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2362173-6 WG 07-OCT-19 14:00 FR_TBSSMW2- 2019_10_07			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	482			
	Hardness (as CaCO3) (mg/L)	271			
	pH (pH)	8.36			
	ORP (mV)	344			
	Total Suspended Solids (mg/L)	9.3			
	Total Dissolved Solids (mg/L)	327 <sup>DLHC</sup>			
	Turbidity (NTU)	1.0			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	130			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	13.6			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	144			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	0.260			
	Ion Balance (%)	98.2			
	Nitrate (as N) (mg/L)	2.88			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.177 <sup>TKNI</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0049 <sup>RRV</sup>			
	Sulfate (SO4) (mg/L)	119			
	Anion Sum (meq/L)	5.57			
	Cation Sum (meq/L)	5.47			
	Cation - Anion Balance (%)	-0.9			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0664			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2362173-1 WG 07-OCT-19 13:00 FR_TB-1A- 2019_10_07	L2362173-2 WG 07-OCT-19 11:05 FR_TB-1B-2019- 10-07	L2362173-3 WG 07-OCT-19 09:35 FR_FLD-2019-10- 07	L2362173-4 WG 07-OCT-19 11:10 FR_DC3- 2019_10_07	L2362173-5 WG 07-OCT-19 11:15 FR_TBSSMW1- 2019_10_07	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.065	<0.010	<0.010	0.011	0.011
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0088	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	121	65.5	<0.050	12.2	12.2
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00012	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.11	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00021	<0.00020	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	4.73	<0.010	<0.010	0.168	0.172
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	1.43	0.0056	<0.0010	0.179	0.180
	Magnesium (Mg)-Dissolved (mg/L)	45.0	23.3	<0.10	27.9	28.1
	Manganese (Mn)-Dissolved (mg/L)	0.0998	<0.00010	<0.00010	0.0379	0.0380
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000201	0.000793	<0.000050	0.0141	0.0138
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	12.8	0.630	<0.050	5.71	5.72
	Selenium (Se)-Dissolved (ug/L)	<0.10 <sup>DLM</sup>	18.5	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	3.93	1.57	<0.050	2.46	2.52
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLM</sup>	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	72.7	0.631	<0.050	18.0	18.3
	Strontium (Sr)-Dissolved (mg/L)	1.20	0.113	<0.00020	0.213	0.208
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000073	0.00103	<0.000010	0.000165	0.000162
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0098	<0.0010	0.0028 <sup>RRV</sup>	0.0013	0.0016

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2362173-6 WG 07-OCT-19 14:00 FR_TBSSMW2- 2019_10_07			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0133			
	Calcium (Ca)-Dissolved (mg/L)	67.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00011			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00034			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0074			
	Magnesium (Mg)-Dissolved (mg/L)	24.9			
	Manganese (Mn)-Dissolved (mg/L)	0.00081			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000924			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.789			
	Selenium (Se)-Dissolved (ug/L)	21.1			
	Silicon (Si)-Dissolved (mg/L)	1.67			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.632			
	Strontium (Sr)-Dissolved (mg/L)	0.116			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00109			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2362173-5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2362173-3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2362173-5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2362173-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2362173-5
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2362173-5
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2362173-3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2362173-5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2362173-5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2362173-3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2362173-5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2362173-5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2362173-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2362173-3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2362173-2, -3, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2362173-5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2362173-3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**C-DIS-ORG-LOW-CL** Water Dissolved Organic Carbon APHA 5310 B-Instrumental

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**                      Water                      Nitrate in Water by IC (Low Level)                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**                                      Water                      Oxidation reduction potential by elect.                      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**                      Water                      Phosphorus (P)-Total                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**    Water                      pH                      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**                      Water                      Orthophosphate-Dissolved (as P)                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                                      Water                      Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water                      Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water                      Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**    Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

10/7/2019

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 1 of 17

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4862928</b>							
<b>WG3186491-21</b>	<b>DUP</b>	<b>L2362173-6</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3186491-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.0		%		85-115	09-OCT-19
<b>WG3186491-20</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.6		%		85-115	09-OCT-19
<b>WG3186491-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	09-OCT-19
<b>WG3186491-19</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	09-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4867277</b>							
<b>WG3188818-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	11-OCT-19
<b>WG3188818-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	11-OCT-19
<b>WG3188818-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-OCT-19
<b>WG3188818-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869507</b>							
<b>WG3189347-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.0		%		80-120	12-OCT-19
<b>WG3189347-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-OCT-19
<b>WG3189347-4</b>	<b>MS</b>	<b>L2362173-1</b>						
Beryllium (Be)-Dissolved			103.6		%		70-130	12-OCT-19
<b>Batch</b>	<b>R4884266</b>							
<b>WG3201027-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.7		%		80-120	25-OCT-19
<b>WG3201027-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 2 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-2</b>	<b>LCS</b>							
Bromide (Br)			102.4		%		85-115	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Bromide (Br)			102.3		%		85-115	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Bromide (Br)			103.8		%		75-125	09-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4872690</b>							
<b>WG3193536-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.2		%		80-120	16-OCT-19
<b>WG3193536-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4872690</b>							
<b>WG3193536-6</b>	<b>LCS</b>							
Total Organic Carbon			104.8		%		80-120	16-OCT-19
<b>WG3193536-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-OCT-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							
Chloride (Cl)			101.5		%		90-110	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Chloride (Cl)			101.0		%		90-110	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Chloride (Cl)			117.1		%		75-125	09-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 3 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4867277</b>							
<b>WG3188818-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.2		%		90-110	11-OCT-19
<b>WG3188818-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.3		%		90-110	11-OCT-19
<b>WG3188818-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-19
<b>WG3188818-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							
Fluoride (F)			103.8		%		90-110	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Fluoride (F)			106.1		%		90-110	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Fluoride (F)			122.5		%		75-125	09-OCT-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4867974</b>							
<b>WG3189532-3</b>	<b>DUP</b>	<b>L2362173-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	12-OCT-19
<b>WG3189532-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.2		%		80-120	12-OCT-19
<b>WG3189532-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.1		%		80-120	12-OCT-19
<b>WG3189532-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-19
<b>WG3189532-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 4 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4867974</b>							
<b>WG3189854-5</b>	<b>DUP</b>	<b>L2362173-2</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	12-OCT-19
<b>WG3189854-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			98.7		%		80-120	12-OCT-19
<b>WG3189854-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	12-OCT-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869507</b>							
<b>WG3189347-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.4		%		80-120	12-OCT-19
Antimony (Sb)-Dissolved			97.6		%		80-120	12-OCT-19
Arsenic (As)-Dissolved			101.5		%		80-120	12-OCT-19
Barium (Ba)-Dissolved			98.5		%		80-120	12-OCT-19
Bismuth (Bi)-Dissolved			102.1		%		80-120	12-OCT-19
Boron (B)-Dissolved			100.1		%		80-120	12-OCT-19
Cadmium (Cd)-Dissolved			100.0		%		80-120	12-OCT-19
Calcium (Ca)-Dissolved			104.0		%		80-120	12-OCT-19
Chromium (Cr)-Dissolved			104.4		%		80-120	12-OCT-19
Cobalt (Co)-Dissolved			102.6		%		80-120	12-OCT-19
Copper (Cu)-Dissolved			101.9		%		80-120	12-OCT-19
Iron (Fe)-Dissolved			103.2		%		80-120	12-OCT-19
Lead (Pb)-Dissolved			102.2		%		80-120	12-OCT-19
Lithium (Li)-Dissolved			98.4		%		80-120	12-OCT-19
Magnesium (Mg)-Dissolved			99.9		%		80-120	12-OCT-19
Manganese (Mn)-Dissolved			105.9		%		80-120	12-OCT-19
Molybdenum (Mo)-Dissolved			100.4		%		80-120	12-OCT-19
Nickel (Ni)-Dissolved			101.5		%		80-120	12-OCT-19
Potassium (K)-Dissolved			102.0		%		80-120	12-OCT-19
Selenium (Se)-Dissolved			104.1		%		80-120	12-OCT-19
Silicon (Si)-Dissolved			105.4		%		60-140	12-OCT-19
Silver (Ag)-Dissolved			98.1		%		80-120	12-OCT-19
Sodium (Na)-Dissolved			104.8		%		80-120	12-OCT-19
Strontium (Sr)-Dissolved			101.6		%		80-120	12-OCT-19
Thallium (Tl)-Dissolved			100.7		%		80-120	12-OCT-19
Tin (Sn)-Dissolved			100.1		%		80-120	12-OCT-19
Titanium (Ti)-Dissolved			95.5		%		80-120	12-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 5 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869507</b>							
<b>WG3189347-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			102.9		%		80-120	12-OCT-19
Vanadium (V)-Dissolved			104.0		%		80-120	12-OCT-19
Zinc (Zn)-Dissolved			102.2		%		80-120	12-OCT-19
<b>WG3189347-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-OCT-19
<b>WG3189347-4</b>	<b>MS</b>	<b>L2362173-1</b>						



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 6 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869507</b>							
<b>WG3189347-4</b>	<b>MS</b>	<b>L2362173-1</b>						
Aluminum (Al)-Dissolved			107.1		%		70-130	12-OCT-19
Antimony (Sb)-Dissolved			100.1		%		70-130	12-OCT-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Bismuth (Bi)-Dissolved			86.6		%		70-130	12-OCT-19
Boron (B)-Dissolved			102.2		%		70-130	12-OCT-19
Cadmium (Cd)-Dissolved			105.0		%		70-130	12-OCT-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Chromium (Cr)-Dissolved			107.7		%		70-130	12-OCT-19
Cobalt (Co)-Dissolved			103.4		%		70-130	12-OCT-19
Copper (Cu)-Dissolved			98.4		%		70-130	12-OCT-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Lead (Pb)-Dissolved			92.5		%		70-130	12-OCT-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Molybdenum (Mo)-Dissolved			103.2		%		70-130	12-OCT-19
Nickel (Ni)-Dissolved			99.8		%		70-130	12-OCT-19
Potassium (K)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Silicon (Si)-Dissolved			102.6		%		70-130	12-OCT-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	12-OCT-19
Thallium (Tl)-Dissolved			91.8		%		70-130	12-OCT-19
Tin (Sn)-Dissolved			99.9		%		70-130	12-OCT-19
Titanium (Ti)-Dissolved			107.7		%		70-130	12-OCT-19
Uranium (U)-Dissolved			98.5		%		70-130	12-OCT-19
Vanadium (V)-Dissolved			112.1		%		70-130	12-OCT-19
Zinc (Zn)-Dissolved			102.7		%		70-130	12-OCT-19
<b>Batch</b>	<b>R4870509</b>							
<b>WG3191501-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.9		%		80-120	16-OCT-19
Antimony (Sb)-Dissolved			93.2		%		80-120	16-OCT-19
Arsenic (As)-Dissolved			96.2		%		80-120	16-OCT-19
Barium (Ba)-Dissolved			96.2		%		80-120	16-OCT-19
Bismuth (Bi)-Dissolved			110.7		%		80-120	16-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 7 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4870509</b>							
<b>WG3191501-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			90.7		%		80-120	16-OCT-19
Cadmium (Cd)-Dissolved			99.4		%		80-120	16-OCT-19
Calcium (Ca)-Dissolved			95.7		%		80-120	16-OCT-19
Chromium (Cr)-Dissolved			98.5		%		80-120	16-OCT-19
Cobalt (Co)-Dissolved			99.6		%		80-120	16-OCT-19
Copper (Cu)-Dissolved			94.1		%		80-120	16-OCT-19
Iron (Fe)-Dissolved			82.1		%		80-120	16-OCT-19
Lead (Pb)-Dissolved			97.3		%		80-120	16-OCT-19
Lithium (Li)-Dissolved			94.9		%		80-120	16-OCT-19
Magnesium (Mg)-Dissolved			95.0		%		80-120	16-OCT-19
Manganese (Mn)-Dissolved			93.7		%		80-120	16-OCT-19
Molybdenum (Mo)-Dissolved			98.0		%		80-120	16-OCT-19
Nickel (Ni)-Dissolved			97.3		%		80-120	16-OCT-19
Potassium (K)-Dissolved			100.0		%		80-120	16-OCT-19
Selenium (Se)-Dissolved			96.6		%		80-120	16-OCT-19
Silicon (Si)-Dissolved			95.3		%		60-140	16-OCT-19
Silver (Ag)-Dissolved			99.3		%		80-120	16-OCT-19
Sodium (Na)-Dissolved			101.6		%		80-120	16-OCT-19
Strontium (Sr)-Dissolved			103.9		%		80-120	16-OCT-19
Thallium (Tl)-Dissolved			95.8		%		80-120	16-OCT-19
Tin (Sn)-Dissolved			96.7		%		80-120	16-OCT-19
Titanium (Ti)-Dissolved			96.6		%		80-120	16-OCT-19
Uranium (U)-Dissolved			103.2		%		80-120	16-OCT-19
Vanadium (V)-Dissolved			99.0		%		80-120	16-OCT-19
Zinc (Zn)-Dissolved			97.5		%		80-120	16-OCT-19
<b>WG3191501-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 8 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4870509</b>							
<b>WG3191501-1</b>	<b>MB</b>	<b>NP</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
<b>Batch</b>	<b>R4884266</b>							
<b>WG3201027-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.6		%		80-120	25-OCT-19
Antimony (Sb)-Dissolved			96.1		%		80-120	25-OCT-19
Arsenic (As)-Dissolved			106.2		%		80-120	25-OCT-19
Barium (Ba)-Dissolved			98.8		%		80-120	25-OCT-19
Bismuth (Bi)-Dissolved			100.1		%		80-120	25-OCT-19
Boron (B)-Dissolved			101.3		%		80-120	25-OCT-19
Cadmium (Cd)-Dissolved			102.7		%		80-120	25-OCT-19
Calcium (Ca)-Dissolved			102.8		%		80-120	25-OCT-19
Chromium (Cr)-Dissolved			100.2		%		80-120	25-OCT-19
Cobalt (Co)-Dissolved			99.2		%		80-120	25-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 9 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884266</b>							
<b>WG3201027-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			96.9		%		80-120	25-OCT-19
Iron (Fe)-Dissolved			99.6		%		80-120	25-OCT-19
Lead (Pb)-Dissolved			101.5		%		80-120	25-OCT-19
Lithium (Li)-Dissolved			97.4		%		80-120	25-OCT-19
Magnesium (Mg)-Dissolved			99.9		%		80-120	25-OCT-19
Manganese (Mn)-Dissolved			105.9		%		80-120	25-OCT-19
Molybdenum (Mo)-Dissolved			99.3		%		80-120	25-OCT-19
Nickel (Ni)-Dissolved			99.4		%		80-120	25-OCT-19
Potassium (K)-Dissolved			101.2		%		80-120	25-OCT-19
Selenium (Se)-Dissolved			109.0		%		80-120	25-OCT-19
Silicon (Si)-Dissolved			106.3		%		60-140	25-OCT-19
Silver (Ag)-Dissolved			92.9		%		80-120	25-OCT-19
Sodium (Na)-Dissolved			104.0		%		80-120	25-OCT-19
Strontium (Sr)-Dissolved			94.2		%		80-120	25-OCT-19
Thallium (Tl)-Dissolved			101.7		%		80-120	25-OCT-19
Tin (Sn)-Dissolved			97.2		%		80-120	25-OCT-19
Titanium (Ti)-Dissolved			102.0		%		80-120	25-OCT-19
Uranium (U)-Dissolved			104.1		%		80-120	25-OCT-19
Vanadium (V)-Dissolved			102.7		%		80-120	25-OCT-19
Zinc (Zn)-Dissolved			100.1		%		80-120	25-OCT-19
<b>WG3201027-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19





## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 10 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884266</b>							
<b>WG3201027-1</b>	<b>MB</b>	<b>NP</b>						
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
<b>Batch</b>	<b>R4884892</b>							
<b>WG3201773-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.8		%		80-120	25-OCT-19
Antimony (Sb)-Dissolved			94.2		%		80-120	25-OCT-19
Arsenic (As)-Dissolved			101.1		%		80-120	25-OCT-19
Barium (Ba)-Dissolved			95.6		%		80-120	25-OCT-19
Bismuth (Bi)-Dissolved			104.7		%		80-120	25-OCT-19
Boron (B)-Dissolved			102.9		%		80-120	25-OCT-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	25-OCT-19
Calcium (Ca)-Dissolved			95.8		%		80-120	25-OCT-19
Chromium (Cr)-Dissolved			98.7		%		80-120	25-OCT-19
Cobalt (Co)-Dissolved			97.1		%		80-120	25-OCT-19
Copper (Cu)-Dissolved			96.0		%		80-120	25-OCT-19
Iron (Fe)-Dissolved			98.9		%		80-120	25-OCT-19
Lead (Pb)-Dissolved			99.1		%		80-120	25-OCT-19
Lithium (Li)-Dissolved			93.0		%		80-120	25-OCT-19
Magnesium (Mg)-Dissolved			100.4		%		80-120	25-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 11 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884892</b>							
<b>WG3201773-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			99.2		%		80-120	25-OCT-19
Molybdenum (Mo)-Dissolved			103.6		%		80-120	25-OCT-19
Nickel (Ni)-Dissolved			97.7		%		80-120	25-OCT-19
Potassium (K)-Dissolved			104.0		%		80-120	25-OCT-19
Selenium (Se)-Dissolved			101.9		%		80-120	25-OCT-19
Silicon (Si)-Dissolved			106.5		%		60-140	25-OCT-19
Silver (Ag)-Dissolved			94.8		%		80-120	25-OCT-19
Sodium (Na)-Dissolved			105.7		%		80-120	25-OCT-19
Strontium (Sr)-Dissolved			97.0		%		80-120	25-OCT-19
Thallium (Tl)-Dissolved			98.3		%		80-120	25-OCT-19
Tin (Sn)-Dissolved			97.9		%		80-120	25-OCT-19
Titanium (Ti)-Dissolved			96.6		%		80-120	25-OCT-19
Uranium (U)-Dissolved			102.9		%		80-120	25-OCT-19
Vanadium (V)-Dissolved			97.8		%		80-120	25-OCT-19
Zinc (Zn)-Dissolved			99.1		%		80-120	25-OCT-19
<b>WG3201773-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 12 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884892</b>							
<b>WG3201773-1</b>	<b>MB</b>	<b>NP</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871589</b>							
<b>WG3191613-11</b>	<b>DUP</b>	<b>L2362173-3</b>						
Ammonia as N		0.0070	0.0071		mg/L	1.4	20	16-OCT-19
<b>WG3191613-10</b>	<b>LCS</b>							
Ammonia as N			101.1		%		85-115	16-OCT-19
<b>WG3191613-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-OCT-19
<b>WG3191613-12</b>	<b>MS</b>	<b>L2362173-3</b>						
Ammonia as N			110.1		%		75-125	16-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							
Nitrite (as N)			103.2		%		90-110	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Nitrite (as N)			103.0		%		90-110	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Nitrite (as N)			117.6		%		75-125	09-OCT-19



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 13 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4866497</b>								
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Nitrate (as N)			116.2		%		75-125	09-OCT-19
<b>ORP-CL</b>								
<b>Batch R4865811</b>								
<b>WG3187085-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	09-OCT-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4866475</b>								
<b>WG3188034-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.6		%		80-120	10-OCT-19
<b>WG3188034-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-OCT-19
<b>PH-CL</b>								
<b>Batch R4867277</b>								
<b>WG3188818-11</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	11-OCT-19
<b>WG3188818-14</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	11-OCT-19
<b>PO4-DO-L-COL-CL</b>								
<b>Batch R4866052</b>								
<b>WG3186694-9</b>	<b>DUP</b>	<b>L2362173-1</b>						
Orthophosphate-Dissolved (as P)		0.0560	0.0549		mg/L	2.0	20	09-OCT-19
<b>WG3186694-11</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.1		%		80-120	09-OCT-19
<b>WG3186694-8</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.7		%		80-120	09-OCT-19
<b>WG3186694-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 14 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4866052</b>							
<b>WG3186694-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-OCT-19
<b>WG3186694-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-OCT-19
<b>WG3186694-13</b>	<b>MS</b>	<b>L2362173-3</b>						
Orthophosphate-Dissolved (as P)			96.1		%		70-130	09-OCT-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4866497</b>							
<b>WG3187935-3</b>	<b>DUP</b>	<b>L2362173-3</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	09-OCT-19
<b>WG3187935-2</b>	<b>LCS</b>							
Sulfate (SO4)			103.2		%		90-110	09-OCT-19
<b>WG3187935-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.5		%		90-110	09-OCT-19
<b>WG3187935-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-19
<b>WG3187935-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	09-OCT-19
<b>WG3187935-4</b>	<b>MS</b>	<b>L2362173-3</b>						
Sulfate (SO4)			119.4		%		75-125	09-OCT-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4867403</b>							
<b>WG3187502-12</b>	<b>DUP</b>	<b>L2362173-1</b>						
Total Dissolved Solids		635	620		mg/L	2.4	20	10-OCT-19
<b>WG3187502-11</b>	<b>LCS</b>							
Total Dissolved Solids			98.7		%		85-115	10-OCT-19
<b>WG3187502-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	10-OCT-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4867818</b>							
<b>WG3189145-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.0		%		75-125	11-OCT-19
<b>WG3189145-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-OCT-19
<b>WG3189145-12</b>	<b>MS</b>	<b>L2362173-3</b>						
Total Kjeldahl Nitrogen			111.9		%		70-130	12-OCT-19
<b>TSS-L-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 15 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4868134</b>							
<b>WG3187913-6</b>	<b>LCS</b>							
Total Suspended Solids			94.6		%		85-115	10-OCT-19
<b>WG3187913-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	10-OCT-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4864768</b>							
<b>WG3186758-6</b>	<b>DUP</b>	<b>L2362173-1</b>						
Turbidity		49.4	49.3		NTU	0.2	15	09-OCT-19
<b>WG3186758-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	09-OCT-19
<b>WG3186758-8</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	09-OCT-19
<b>WG3186758-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	09-OCT-19
<b>WG3186758-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	09-OCT-19

# Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 16 of 17

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2362173

Report Date: 28-OCT-19

Page 17 of 17

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	07-OCT-19 13:00	09-OCT-19 13:30	0.25	48	hours	EHTR-FM
	2	07-OCT-19 11:05	09-OCT-19 13:30	0.25	50	hours	EHTR-FM
	3	07-OCT-19 09:35	09-OCT-19 13:30	0.25	52	hours	EHTR-FM
	4	07-OCT-19 11:10	09-OCT-19 13:30	0.25	50	hours	EHTR-FM
	5	07-OCT-19 11:15	09-OCT-19 13:30	0.25	50	hours	EHTR-FM
	6	07-OCT-19 14:00	09-OCT-19 13:30	0.25	48	hours	EHTR-FM
pH							
	1	07-OCT-19 13:00	11-OCT-19 11:00	0.25	94	hours	EHTR-FM
	2	07-OCT-19 11:05	11-OCT-19 11:00	0.25	96	hours	EHTR-FM
	3	07-OCT-19 09:35	11-OCT-19 11:00	0.25	97	hours	EHTR-FM
	4	07-OCT-19 11:10	11-OCT-19 11:00	0.25	96	hours	EHTR-FM
	5	07-OCT-19 11:15	11-OCT-19 11:00	0.25	96	hours	EHTR-FM
	6	07-OCT-19 14:00	11-OCT-19 11:00	0.25	93	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2362173 were received on 08-OCT-19 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b>	<b>10/7/2019</b>	<b>TURNAROUND TIME:</b>	Regular	<b>RUSH:</b>
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Teck Coal	Lab Name	ALS Calgary	Report Format / Distribution
Project Manager	Leilah Tate	Lab Contact	Lyudmyla Shvets	Excel PDF EDD
Email	Leilah.Tate@teck.com	Email	Lyudmyla.Shvets@ALSglobal.com	Email 1: Leilah.Tate@teck.com X X X
Address	Suite 1000, 205 - 9th Ave S.E.	Address	2559 29 Street NE	Email 2: teckcoal@equisonline.com X X X
City	Calgary	City	Calgary	Email 3: gregory_jones@golder.com X X X
Province	AB	Province	AB	Email 4: tom.jeffery@teck.com X X X
Postal Code	T2G 0R3	Postal Code	T1Y 7B5	Email 5: Scott.Roughead@teck.com X X X
Country	Canada	Country	Canada	
Phone Number	1-604-831-3830	Phone Number	403 407 1794	PO number
				<b>VPO00632083</b>

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



1  
2  
3  
4  
5  
6

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL				
FR_TB-1A-2019_10_07	FR_LM-3B	WG	N	10/7/2019	13:00	G	6	1	1	1	1	1	1				
FR_TBSSMW1-2019_10_07	FR_TBSSMW1	WG	N	10/7/2019	11:05	G	6	1	1	1	1	1	1				
FR_TBSSMW2-2019_10_07	FR_TBSSMW2	WG	N	10/7/2019	9:35	G	6	1	1	1	1	1	1				
FR_DC3-2019_10_07	FR_DC3	WG	N	10/7/2019	11:10	G	6	1	1	1	1	1	1				
FR_FLD-2019-10-07	FR_FLD	WG	N	10/7/2019	11:15	G	6	1	1	1	1	1	1				
FR_TB-1B-2019-10-07	FR_TB-1B	WG	N	10/7/2019	14:00	G	6	1	1	1	1	1	1				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
All samples are field filtered and preserved as required.			<i>[Signature]</i>	10/8 9:20

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
<b>Sampler's Name</b>	Tyler Fortin		<b>Mobile #</b>	250-464-5914
<b>Sampler's Signature</b>			<b>Date/Time</b>	October 7, 2019

5°C




TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 10-OCT-19  
Report Date: 23-OCT-19 15:23 (MT)  
Version: FINAL REV. 2

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2363724  
Project P.O. #: VPO00632083  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 2019-10-09  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2363724-1 WG 09-OCT-19 10:55 FR_LP-1B_2019-10-09	L2363724-2 WG 09-OCT-19 13:05 FR_LP-2B_2019-10-09	L2363724-3 WG 09-OCT-19 14:35 FR_KB-1_2019-10-09	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	532	1000	1470	
	Hardness (as CaCO3) (mg/L)	313	660	983	
	pH (pH)	8.18	7.96	8.05	
	ORP (mV)	275	445	466	
	Total Suspended Solids (mg/L)	204	1.4	1.6	
	Total Dissolved Solids (mg/L)	356 <sup>DLHC</sup>	725 <sup>DLHC</sup>	1260 <sup>DLHC</sup>	
	Turbidity (NTU)	27.4	0.49	0.36	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.4	29.5	10.6	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	292	608	435	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	292	608	435	
	Ammonia as N (mg/L)	0.0500	0.0072	0.0058	
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	
	Chloride (Cl) (mg/L)	0.78	3.0 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	
	Fluoride (F) (mg/L)	0.365	<0.10 <sup>DLHC</sup>	0.20 <sup>DLHC</sup>	
	Ion Balance (%)	97.8	99.0 <sup>DLHC</sup>	99.4 <sup>DLHC</sup>	
	Nitrate (as N) (mg/L)	<0.0050	2.44 <sup>DLHC</sup>	47.3 <sup>DLHC</sup>	
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	
	Total Kjeldahl Nitrogen (mg/L)	0.176	0.336	<0.050 <sup>TKNI</sup>	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0054	0.0046	0.0022	
	Phosphorus (P)-Total (mg/L)	0.125 <sup>DLHC</sup>	0.0050 <sup>DLHC</sup>	0.0022 <sup>DLHC</sup>	
	Sulfate (SO4) (mg/L)	31.4	50.2	381	
	Anion Sum (meq/L)	6.53	13.5	20.0	
	Cation Sum (meq/L)	6.39	13.3	19.9	
	Cation - Anion Balance (%)	-1.1	-0.5	-0.3	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.08	1.25	0.57
Total Organic Carbon (mg/L)		3.57	1.33	0.57	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	LAB	LAB	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00054	
	Arsenic (As)-Dissolved (mg/L)	0.00073	0.00020	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0604	0.191	0.0395	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2363724-1 WG 09-OCT-19 10:55 FR_LP-1B_2019-10-09	L2363724-2 WG 09-OCT-19 13:05 FR_LP-2B_2019-10-09	L2363724-3 WG 09-OCT-19 14:35 FR_KB-1_2019-10-09	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.012	<0.010	0.029	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0145	0.514	
	Calcium (Ca)-Dissolved (mg/L)	78.2	183	218	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00050	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.27	<0.10	0.12	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00048	0.00043	
	Iron (Fe)-Dissolved (mg/L)	0.030	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0043	0.0050	0.0744	
	Magnesium (Mg)-Dissolved (mg/L)	28.6	49.2	106	
	Manganese (Mn)-Dissolved (mg/L)	0.158	0.00685	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00244	0.000276	0.00187	
	Nickel (Ni)-Dissolved (mg/L)	0.00094	0.00088	0.0168	
	Potassium (K)-Dissolved (mg/L)	1.86	1.33	4.32	
	Selenium (Se)-Dissolved (ug/L)	0.106	0.228	175	
	Silicon (Si)-Dissolved (mg/L)	6.13	10.3	2.38	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	1.83	2.57	3.13	
	Strontium (Sr)-Dissolved (mg/L)	0.125	0.187	0.214	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000016	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00182	0.000906	0.00849	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0097	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2363724-2	FR_LP-2B_2019-10-09	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L2363724-3	FR_KB-1_2019-10-09	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
		WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2363724-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2363724-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2363724-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2363724-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2363724-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2363724-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

2019-10-09

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869352</b>							
<b>WG3190819-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.6		%		85-115	11-OCT-19
<b>WG3190819-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	11-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4867277</b>							
<b>WG3188818-26</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	11-OCT-19
<b>WG3188818-25</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-3</b>	<b>DUP</b>	<b>L2363724-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	16-OCT-19
<b>WG3190954-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.2		%		80-120	16-OCT-19
<b>WG3190954-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-OCT-19
<b>WG3190954-4</b>	<b>MS</b>	<b>L2363724-2</b>						
Beryllium (Be)-Dissolved			102.4		%		70-130	16-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4868044</b>							
<b>WG3189918-2</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	11-OCT-19
<b>WG3189918-6</b>	<b>LCS</b>							
Bromide (Br)			99.4		%		85-115	11-OCT-19
<b>WG3189918-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-OCT-19
<b>WG3189918-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4874700</b>							
<b>WG3195764-3</b>	<b>DUP</b>	<b>L2363724-3</b>						
Dissolved Organic Carbon		0.57	0.63		mg/L	10	20	18-OCT-19
<b>WG3195764-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			89.3		%		80-120	18-OCT-19
<b>WG3195764-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4874700							
WG3195764-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-OCT-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4874700							
WG3195764-3	DUP	L2363724-3						
Total Organic Carbon		0.57	0.53		mg/L	8.7	20	18-OCT-19
WG3195764-2	LCS							
Total Organic Carbon			84.5		%		80-120	18-OCT-19
WG3195764-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	18-OCT-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4868044							
WG3189918-2	LCS							
Chloride (Cl)			101.4		%		90-110	11-OCT-19
WG3189918-6	LCS							
Chloride (Cl)			101.4		%		90-110	11-OCT-19
WG3189918-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	11-OCT-19
WG3189918-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	11-OCT-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4867277							
WG3188818-26	LCS							
Conductivity (@ 25C)			98.8		%		90-110	11-OCT-19
WG3188818-25	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-OCT-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4868044							
WG3189918-2	LCS							
Fluoride (F)			102.1		%		90-110	11-OCT-19
WG3189918-6	LCS							
Fluoride (F)			102.0		%		90-110	11-OCT-19
WG3189918-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	11-OCT-19
WG3189918-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	11-OCT-19
<b>Water</b>								



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4871047</b>							
<b>WG3190457-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.1		%		80-120	16-OCT-19
<b>WG3190457-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-OCT-19
<b>Batch</b>	<b>R4873683</b>							
<b>WG3194834-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.8		%		80-120	18-OCT-19
<b>WG3194834-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-OCT-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4871047</b>							
<b>WG3191812-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			98.2		%		80-120	16-OCT-19
<b>WG3191812-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-OCT-19
<b>Batch</b>	<b>R4876587</b>							
<b>WG3196956-11</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.1		%		80-120	21-OCT-19
<b>WG3196956-10</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	21-OCT-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-3</b>	<b>DUP</b>	<b>L2363724-1</b>						
Aluminum (Al)-Dissolved			<0.0030	<0.0030	RPD-NA	mg/L	N/A	20
Antimony (Sb)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20
Arsenic (As)-Dissolved			0.00073	0.00072		mg/L	0.5	20
Barium (Ba)-Dissolved			0.0604	0.0593		mg/L	1.9	20
Bismuth (Bi)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20
Boron (B)-Dissolved			0.012	0.012		mg/L	2.5	20
Cadmium (Cd)-Dissolved			<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20
Calcium (Ca)-Dissolved			78.2	78.0		mg/L	0.3	20
Chromium (Cr)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20
Cobalt (Co)-Dissolved			0.00027	0.00026		mg/L	3.9	20
Copper (Cu)-Dissolved			<0.00020	<0.00020	RPD-NA	mg/L	N/A	20
Iron (Fe)-Dissolved			0.030	0.030		mg/L	1.6	20
Lead (Pb)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-3</b>	<b>DUP</b>	<b>L2363724-1</b>						
Lithium (Li)-Dissolved		0.0043	0.0043		mg/L	0.2	20	16-OCT-19
Magnesium (Mg)-Dissolved		28.6	28.2		mg/L	1.4	20	16-OCT-19
Manganese (Mn)-Dissolved		0.158	0.155		mg/L	2.0	20	16-OCT-19
Molybdenum (Mo)-Dissolved		0.00244	0.00246		mg/L	0.8	20	16-OCT-19
Nickel (Ni)-Dissolved		0.00094	0.00091		mg/L	3.6	20	16-OCT-19
Potassium (K)-Dissolved		1.86	1.85		mg/L	0.3	20	16-OCT-19
Selenium (Se)-Dissolved		0.000106	0.000089		mg/L	17	20	16-OCT-19
Silicon (Si)-Dissolved		6.13	6.19		mg/L	1.1	20	16-OCT-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-OCT-19
Sodium (Na)-Dissolved		1.83	1.83		mg/L	0.2	20	16-OCT-19
Strontium (Sr)-Dissolved		0.125	0.124		mg/L	1.1	20	16-OCT-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-OCT-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-OCT-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-OCT-19
Uranium (U)-Dissolved		0.00182	0.00174		mg/L	4.5	20	16-OCT-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-OCT-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	16-OCT-19
<b>WG3190954-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.1		%		80-120	16-OCT-19
Antimony (Sb)-Dissolved			98.1		%		80-120	16-OCT-19
Arsenic (As)-Dissolved			100.1		%		80-120	16-OCT-19
Barium (Ba)-Dissolved			99.6		%		80-120	16-OCT-19
Bismuth (Bi)-Dissolved			98.4		%		80-120	16-OCT-19
Boron (B)-Dissolved			101.6		%		80-120	16-OCT-19
Cadmium (Cd)-Dissolved			102.8		%		80-120	16-OCT-19
Calcium (Ca)-Dissolved			100.8		%		80-120	16-OCT-19
Chromium (Cr)-Dissolved			103.2		%		80-120	16-OCT-19
Cobalt (Co)-Dissolved			101.7		%		80-120	16-OCT-19
Copper (Cu)-Dissolved			101.3		%		80-120	16-OCT-19
Iron (Fe)-Dissolved			99.7		%		80-120	16-OCT-19
Lead (Pb)-Dissolved			101.3		%		80-120	16-OCT-19
Lithium (Li)-Dissolved			101.4		%		80-120	16-OCT-19
Magnesium (Mg)-Dissolved			104.5		%		80-120	16-OCT-19
Manganese (Mn)-Dissolved			103.5		%		80-120	16-OCT-19



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Dissolved			99.9		%		80-120	16-OCT-19
Nickel (Ni)-Dissolved			102.3		%		80-120	16-OCT-19
Potassium (K)-Dissolved			101.8		%		80-120	16-OCT-19
Selenium (Se)-Dissolved			100.3		%		80-120	16-OCT-19
Silicon (Si)-Dissolved			108.9		%		60-140	16-OCT-19
Silver (Ag)-Dissolved			97.4		%		80-120	16-OCT-19
Sodium (Na)-Dissolved			111.9		%		80-120	16-OCT-19
Strontium (Sr)-Dissolved			98.8		%		80-120	16-OCT-19
Thallium (Tl)-Dissolved			101.9		%		80-120	16-OCT-19
Tin (Sn)-Dissolved			98.1		%		80-120	16-OCT-19
Titanium (Ti)-Dissolved			94.4		%		80-120	16-OCT-19
Uranium (U)-Dissolved			101.8		%		80-120	16-OCT-19
Vanadium (V)-Dissolved			104.3		%		80-120	16-OCT-19
Zinc (Zn)-Dissolved			101.6		%		80-120	16-OCT-19
<b>WG3190954-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-OCT-19



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-OCT-19
<b>WG3190954-4</b>	<b>MS</b>	<b>L2363724-2</b>						
Aluminum (Al)-Dissolved			104.3		%		70-130	16-OCT-19
Antimony (Sb)-Dissolved			100.1		%		70-130	16-OCT-19
Arsenic (As)-Dissolved			111.2		%		70-130	16-OCT-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Bismuth (Bi)-Dissolved			88.1		%		70-130	16-OCT-19
Boron (B)-Dissolved			100.3		%		70-130	16-OCT-19
Cadmium (Cd)-Dissolved			101.5		%		70-130	16-OCT-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Chromium (Cr)-Dissolved			102.1		%		70-130	16-OCT-19
Cobalt (Co)-Dissolved			97.3		%		70-130	16-OCT-19
Copper (Cu)-Dissolved			92.2		%		70-130	16-OCT-19
Iron (Fe)-Dissolved			100.3		%		70-130	16-OCT-19
Lead (Pb)-Dissolved			91.4		%		70-130	16-OCT-19
Lithium (Li)-Dissolved			104.4		%		70-130	16-OCT-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Manganese (Mn)-Dissolved			97.2		%		70-130	16-OCT-19
Molybdenum (Mo)-Dissolved			103.4		%		70-130	16-OCT-19
Nickel (Ni)-Dissolved			94.3		%		70-130	16-OCT-19
Potassium (K)-Dissolved			104.5		%		70-130	16-OCT-19
Selenium (Se)-Dissolved			117.6		%		70-130	16-OCT-19
Silicon (Si)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Silver (Ag)-Dissolved			95.8		%		70-130	16-OCT-19



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871891</b>							
<b>WG3190954-4</b>	<b>MS</b>	<b>L2363724-2</b>						
Sodium (Na)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	16-OCT-19
Thallium (Tl)-Dissolved			93.6		%		70-130	16-OCT-19
Tin (Sn)-Dissolved			98.6		%		70-130	16-OCT-19
Titanium (Ti)-Dissolved			102.5		%		70-130	16-OCT-19
Uranium (U)-Dissolved			97.5		%		70-130	16-OCT-19
Vanadium (V)-Dissolved			105.7		%		70-130	16-OCT-19
Zinc (Zn)-Dissolved			97.5		%		70-130	16-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4875076</b>							
<b>WG3195949-15</b>	<b>DUP</b>	<b>L2363724-3</b>						
Ammonia as N		0.0058	0.0054		mg/L	7.1	20	19-OCT-19
<b>WG3195949-14</b>	<b>LCS</b>							
Ammonia as N			114.1		%		85-115	19-OCT-19
<b>WG3195949-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-OCT-19
<b>WG3195949-16</b>	<b>MS</b>	<b>L2363724-3</b>						
Ammonia as N			111.4		%		75-125	19-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4868044</b>							
<b>WG3189918-2</b>	<b>LCS</b>							
Nitrite (as N)			103.0		%		90-110	11-OCT-19
<b>WG3189918-6</b>	<b>LCS</b>							
Nitrite (as N)			102.8		%		90-110	11-OCT-19
<b>WG3189918-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-OCT-19
<b>WG3189918-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-OCT-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4868044</b>							
<b>WG3189918-2</b>	<b>LCS</b>							
Nitrate (as N)			101.9		%		90-110	11-OCT-19
<b>WG3189918-6</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	11-OCT-19
<b>WG3189918-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-OCT-19



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4868044							
<b>WG3189918-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	11-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4868005							
<b>WG3189705-1 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	11-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4867300							
<b>WG3189143-4 LCS</b>								
Phosphorus (P)-Total			95.0		%		80-120	11-OCT-19
<b>WG3189143-3 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4867277							
<b>WG3188818-26 LCS</b>								
pH			7.01		pH		6.9-7.1	11-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4866794							
<b>WG3188244-6 LCS</b>								
Orthophosphate-Dissolved (as P)			100.8		%		80-120	10-OCT-19
<b>WG3188244-5 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4868044							
<b>WG3189918-2 LCS</b>								
Sulfate (SO4)			102.6		%		90-110	11-OCT-19
<b>WG3189918-6 LCS</b>								
Sulfate (SO4)			102.3		%		90-110	11-OCT-19
<b>WG3189918-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-OCT-19
<b>WG3189918-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871305</b>							
<b>WG3190811-9</b>	<b>DUP</b>	<b>L2363724-3</b>						
Total Dissolved Solids		1260	1270		mg/L	0.8	20	15-OCT-19
<b>WG3190811-8</b>	<b>LCS</b>							
Total Dissolved Solids			105.1		%		85-115	15-OCT-19
<b>WG3190811-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	15-OCT-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4871713</b>							
<b>WG3192234-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.7		%		75-125	16-OCT-19
<b>WG3192234-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-OCT-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4869488</b>							
<b>WG3190262-4</b>	<b>LCS</b>							
Total Suspended Solids			95.0		%		85-115	13-OCT-19
<b>WG3190262-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-OCT-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4866789</b>							
<b>WG3188425-2</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	10-OCT-19
<b>WG3188425-5</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	10-OCT-19
<b>WG3188425-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-OCT-19
<b>WG3188425-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-OCT-19



# Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2363724

Report Date: 23-OCT-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	09-OCT-19 10:55	11-OCT-19 09:30	0.25	47	hours	EHTR-FM
	2	09-OCT-19 13:05	11-OCT-19 09:30	0.25	44	hours	EHTR-FM
	3	09-OCT-19 14:35	11-OCT-19 09:30	0.25	43	hours	EHTR-FM
pH	1	09-OCT-19 10:55	11-OCT-19 11:00	0.25	48	hours	EHTR-FM
	2	09-OCT-19 13:05	11-OCT-19 11:00	0.25	46	hours	EHTR-FM
	3	09-OCT-19 14:35	11-OCT-19 11:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2363724 were received on 10-OCT-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2019-10-09		TURNAROUND TIME: Regular			RUSH:						
PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job# Teck Coal				Lab Name ALS Calgary				Report Format / Distribution			
Project Manager Leilah Tate				Lab Contact Lyudmyla Shvets				Excel PDF EDD			
Email Leilah.Tate@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 1: Leilah.Tate@teck.com X X X			
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE				Email 2: teckcoal@equisonline.com X X X			
City Calgary Province AB				City Calgary Province AB				Email 3: gregory.jones@golder.com X X X			
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada				Email 4: tom.jeffery@teck.com X X X			
Phone Number 1-604-831-3830				Phone Number 403 407 1794				Email 5: Scott.Roughhead@teck.com X X X			
				PO number				VPO00632083			

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL							
FR-LP-1B-2019-10-09	FR-LP-1B	WG	N	2019-10-09	10:55	G	6	1	1	1	1	1	1							
FR-LP-2B-2019-10-09	FR-LP-2B	WG	N		13:05	G	6	1	1	1	1	1	1							
FR-XB1-2019-10-09	FR-XB1	WG	N		14:35	G	6	1	1	1	1	1	1							
		WG	N			G	6	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>[Signature]</i>	10/10 9/10

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin	Mobile #	250 464 5914
Sampler's Signature	<i>[Signature]</i>	Date/Time	2019-10-09



L2363724-COFC

3



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 19-OCT-19  
Report Date: 31-OCT-19 11:40 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2368293  
Project P.O. #: VPO00632083  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers:  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2368293-1	L2368293-2		
		Description	WG	WG		
		Sampled Date	18-OCT-19	18-OCT-19		
		Sampled Time	13:05	10:30		
		Client ID	FR_KB-3A_2019-10-18	FR_KB-3B_2019-10-18		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1660	1410			
	Hardness (as CaCO3) (mg/L)	1300	1040			
	pH (pH)	7.74	7.72			
	ORP (mV)	472	491			
	Total Suspended Solids (mg/L)	30.1	12.9			
	Total Dissolved Solids (mg/L)	1490 <sup>DLHC</sup>	1240 <sup>DLHC</sup>			
	Turbidity (NTU)	10.5	5.50			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	14.6	13.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	338	353			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	338	353			
	Ammonia as N (mg/L)	0.0074	<0.0050			
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>			
	Ion Balance (%)	114	110			
	Nitrate (as N) (mg/L)	63.3 <sup>DLHC</sup>	48.2 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	0.0293 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0012 <sup>RRV</sup>	0.0014 <sup>RRV</sup>			
	Phosphorus (P)-Total (mg/L)	0.0198	<0.0020			
	Sulfate (SO4) (mg/L)	569 <sup>DLHC</sup>	412 <sup>DLHC</sup>			
	Anion Sum (meq/L)	23.1	19.1			
	Cation Sum (meq/L)	26.3	21.0			
	Cation - Anion Balance (%)	6.4	4.7			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
Total Organic Carbon (mg/L)		1.04	<0.50			
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0031			
	Antimony (Sb)-Dissolved (mg/L)	0.00028	0.00011			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0617	0.0613			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2368293-1 WG 18-OCT-19 13:05 FR_KB-3A_2019- 10-18	L2368293-2 WG 18-OCT-19 10:30 FR_KB-3B_2019- 10-18		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.018	0.020		
	Cadmium (Cd)-Dissolved (ug/L)	0.0317	0.0209		
	Calcium (Ca)-Dissolved (mg/L)	314	239		
	Chromium (Cr)-Dissolved (mg/L)	0.00018	0.00011		
	Cobalt (Co)-Dissolved (ug/L)	2.73	0.31		
	Copper (Cu)-Dissolved (mg/L)	0.00087	0.00046		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0394	0.0525		
	Magnesium (Mg)-Dissolved (mg/L)	127	108		
	Manganese (Mn)-Dissolved (mg/L)	0.00913	0.00103		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000949	0.000517		
	Nickel (Ni)-Dissolved (mg/L)	0.00247	<0.00050		
	Potassium (K)-Dissolved (mg/L)	2.15	2.77		
	Selenium (Se)-Dissolved (ug/L)	226	188		
	Silicon (Si)-Dissolved (mg/L)	3.10	2.60		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	3.99	2.93		
	Strontium (Sr)-Dissolved (mg/L)	0.338	0.222		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	0.00011	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00550	0.00618		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0074	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.







## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4875045							
<b>WG3196049-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	19-OCT-19
<b>WG3196049-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	19-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4879501							
<b>WG3198318-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	21-OCT-19
<b>WG3198318-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4879620							
<b>WG3197978-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.7		%		80-120	23-OCT-19
<b>WG3197978-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4879336							
<b>WG3198114-10</b>	<b>LCS</b>							
Bromide (Br)			98.3		%		85-115	19-OCT-19
<b>WG3198114-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	19-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4885715							
<b>WG3202336-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.6		%		80-120	25-OCT-19
<b>WG3202336-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4885715							
<b>WG3202336-2</b>	<b>LCS</b>							
Total Organic Carbon			100.7		%		80-120	25-OCT-19
<b>WG3202336-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-OCT-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4879336							
<b>WG3198114-10 LCS</b>								
Chloride (Cl)			101.4		%		90-110	19-OCT-19
<b>WG3198114-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	19-OCT-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4879501							
<b>WG3198318-14 LCS</b>								
Conductivity (@ 25C)			93.6		%		90-110	21-OCT-19
<b>WG3198318-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-OCT-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4879336							
<b>WG3198114-10 LCS</b>								
Fluoride (F)			106.4		%		90-110	19-OCT-19
<b>WG3198114-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	19-OCT-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4881313							
<b>WG3199098-2 LCS</b>								
Mercury (Hg)-Dissolved			98.8		%		80-120	24-OCT-19
<b>WG3199098-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-OCT-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4879705							
<b>WG3198554-2 LCS</b>								
Mercury (Hg)-Total			96.4		%		80-120	23-OCT-19
<b>WG3198554-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	23-OCT-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4879620							
<b>WG3197978-2 LCS</b>								
Aluminum (Al)-Dissolved			101.9		%		80-120	23-OCT-19
Antimony (Sb)-Dissolved			97.6		%		80-120	23-OCT-19
Arsenic (As)-Dissolved			104.7		%		80-120	23-OCT-19
Barium (Ba)-Dissolved			109.7		%		80-120	23-OCT-19
Bismuth (Bi)-Dissolved			105.8		%		80-120	23-OCT-19
Boron (B)-Dissolved			99.5		%		80-120	23-OCT-19



## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4879620</b>							
<b>WG3197978-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			100.8		%		80-120	23-OCT-19
Calcium (Ca)-Dissolved			104.5		%		80-120	23-OCT-19
Chromium (Cr)-Dissolved			105.9		%		80-120	23-OCT-19
Cobalt (Co)-Dissolved			103.9		%		80-120	23-OCT-19
Copper (Cu)-Dissolved			104.7		%		80-120	23-OCT-19
Iron (Fe)-Dissolved			91.5		%		80-120	23-OCT-19
Lead (Pb)-Dissolved			99.0		%		80-120	23-OCT-19
Lithium (Li)-Dissolved			96.2		%		80-120	23-OCT-19
Magnesium (Mg)-Dissolved			109.2		%		80-120	23-OCT-19
Manganese (Mn)-Dissolved			104.2		%		80-120	23-OCT-19
Molybdenum (Mo)-Dissolved			108.5		%		80-120	23-OCT-19
Nickel (Ni)-Dissolved			105.1		%		80-120	23-OCT-19
Potassium (K)-Dissolved			108.9		%		80-120	23-OCT-19
Selenium (Se)-Dissolved			96.0		%		80-120	23-OCT-19
Silicon (Si)-Dissolved			104.0		%		60-140	23-OCT-19
Silver (Ag)-Dissolved			96.6		%		80-120	23-OCT-19
Sodium (Na)-Dissolved			99.8		%		80-120	23-OCT-19
Strontium (Sr)-Dissolved			103.2		%		80-120	23-OCT-19
Thallium (Tl)-Dissolved			99.4		%		80-120	23-OCT-19
Tin (Sn)-Dissolved			101.5		%		80-120	23-OCT-19
Titanium (Ti)-Dissolved			101.6		%		80-120	23-OCT-19
Uranium (U)-Dissolved			92.2		%		80-120	23-OCT-19
Vanadium (V)-Dissolved			108.2		%		80-120	23-OCT-19
Zinc (Zn)-Dissolved			99.3		%		80-120	23-OCT-19
<b>WG3197978-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19



## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4879620</b>							
<b>WG3197978-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888078</b>							
<b>WG3202675-6</b>	<b>LCS</b>							
Ammonia as N			110.7		%		85-115	26-OCT-19
<b>WG3202675-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4879336</b>							
<b>WG3198114-10</b>	<b>LCS</b>							
Nitrite (as N)			100.1		%		90-110	19-OCT-19
<b>WG3198114-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	19-OCT-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4879336							
<b>WG3198114-10</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	19-OCT-19
<b>WG3198114-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	19-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4874911							
<b>WG3195939-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	19-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4879063							
<b>WG3197840-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	22-OCT-19
<b>WG3197840-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4879501							
<b>WG3198318-14</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	21-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4874909							
<b>WG3195922-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	19-OCT-19
<b>WG3195922-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4879336							
<b>WG3198114-10</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	19-OCT-19
<b>WG3198114-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	19-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4880573							
<b>WG3197560-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.8		%		85-115	22-OCT-19
<b>WG3197560-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
Water								
Batch	R4880573							
WG3197560-4	MB							
Total Dissolved Solids			<10		mg/L		10	22-OCT-19
<b>TKN-L-F-CL</b>								
Water								
Batch	R4879109							
WG3197811-18	LCS							
Total Kjeldahl Nitrogen			98.7		%		75-125	22-OCT-19
WG3197811-17	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-OCT-19
<b>TSS-L-CL</b>								
Water								
Batch	R4882047							
WG3199315-4	LCS							
Total Suspended Solids			97.9		%		85-115	23-OCT-19
WG3199315-3	MB							
Total Suspended Solids			<1.0		mg/L		1	23-OCT-19
<b>TURBIDITY-CL</b>								
Water								
Batch	R4874896							
WG3195926-6	DUP	L2368293-1						
Turbidity		10.5	10.6		NTU	0.9	15	19-OCT-19
WG3195926-5	LCS							
Turbidity			96.5		%		85-115	19-OCT-19
WG3195926-4	MB							
Turbidity			<0.10		NTU		0.1	19-OCT-19

# Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2368293

Report Date: 31-OCT-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	18-OCT-19 13:05	19-OCT-19 14:08	0.25	25	hours	EHTR-FM
	2	18-OCT-19 10:30	19-OCT-19 14:08	0.25	28	hours	EHTR-FM
pH	1	18-OCT-19 13:05	21-OCT-19 09:00	0.25	68	hours	EHTR-FM
	2	18-OCT-19 10:30	21-OCT-19 09:00	0.25	71	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2368293 were received on 19-OCT-19 08:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:		TURNAROUND TIME:				Regular		RUSH:								
PROJECT/CLIENT INFO					LABORATORY				OTHER INFO							
Facility Name / Job#	Teck Coal				Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD				
Project Manager	Leilah Tate				Lab Contact	Lyudmyla Shvets			Email 1:	Leilah.Tate@teck.com	X	X	X			
Email	Leilah.Tate@teck.com				Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X			
Address	Suite 1000, 205 - 9th Ave S.E.				Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X			
City	Calgary	Province	AB		City	Calgary	Province	AB		Email 4:	tom.jeffery@teck.com	X	X	X		
Postal Code	T2G 0R3		Country	Canada		Postal Code	T1Y 7B5		Country	Canada		Email 5:	Scott.Roughead@teck.com	X	X	X
Phone Number	1-604-831-3830				Phone Number	403 407 1794			PO number	VPO00632083						

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	N	F	F	N				
FR-KB-3A-2019-10-18	FR-KB-3A	WG	N	Oct 18/19	13:05	G	6	1	1	1	1	1	1										
FR-KB-3B-2019-10-18	FR-KB-3B	WG	N	Oct 18/19	10:30	G	6	1	1	1	1	1	1										
		WG	N			G	6	1	1	1	1	1	1										
		WG	N			G	6	1	1	1	1	1	1										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>Lyudmyla Shvets</i>	10/19 8:20

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>Kate Peterson</i>	Mobile #	250-946-5029
Sampler's Signature	<i>[Signature]</i>	Date/Time	Oct 18/19 14:50



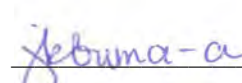
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Leilah Tate  
Suite 1000, 205 - 9th Ave S.E.  
Calgary AB T2G 0R3

Date Received: 22-OCT-19  
Report Date: 31-OCT-19 12:13 (MT)  
Version: FINAL

Client Phone: 604-831-3830

## Certificate of Analysis

Lab Work Order #: L2369147  
Project P.O. #: VPO00632083  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers:  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2369147-1	L2369147-2	L2369147-3	L2369147-4
		Description	WG	WG	WG	WG
		Sampled Date	21-OCT-19	21-OCT-19	21-OCT-19	21-OCT-19
		Sampled Time	13:15	13:20	13:25	13:30
		Client ID	FR_KB-2_2019-10-21	FR_DC4_2019-10-21	FR_FLD4_2019-10-21	FR_TRP_2019-10-21
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1450	1450	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)		1110	1110	<0.50	<0.50
	pH (pH)		7.91	7.93	5.54	5.42
	ORP (mV)		432	393	490	478
	Total Suspended Solids (mg/L)		<1.0	1.4	<1.0	<1.0
	Total Dissolved Solids (mg/L)		1370 <sup>DLHC</sup>	1340 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)		0.35	0.26	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		17.0	19.1	1.4	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		378	425	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		378	425	<1.0	<1.0
	Ammonia as N (mg/L)		0.0088	<0.0050	<0.0050	0.0162 <sup>RRV</sup>
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)		<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50	<0.50
	Fluoride (F) (mg/L)		0.15 <sup>DLHC</sup>	0.15 <sup>DLHC</sup>	<0.020	<0.020
	Ion Balance (%)		116	111 <sup>BL:INT</sup>	0.0	0.0
	Nitrate (as N) (mg/L)		50.2 <sup>DLHC</sup>	49.5 <sup>DLHC</sup>	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)		0.0017	0.0017	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		<0.0020	0.0023 <sup>DLHC</sup>	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		395 <sup>DLHC</sup>	391 <sup>DLHC</sup>	<0.30	<0.30
	Anion Sum (meq/L)		19.4	20.2	<0.10	<0.10
	Cation Sum (meq/L)		22.4	22.4	<0.10	<0.10
	Cation - Anion Balance (%)		7.2	5.2	0.0	0.0
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.68	<0.50	<0.50
Total Organic Carbon (mg/L)			0.62	<0.50	<0.50	<0.50
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)		0.0114	0.0092	<0.0010	
	Antimony (Sb)-Dissolved (mg/L)		0.00043	0.00043	<0.00010	
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)		0.0550	0.0547	<0.00010	
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2369147-1	L2369147-2	L2369147-3	L2369147-4	
Description	WG	WG	WG	WG	
Sampled Date	21-OCT-19	21-OCT-19	21-OCT-19	21-OCT-19	
Sampled Time	13:15	13:20	13:25	13:30	
Client ID	FR_KB-2_2019-10-21	FR_DC4_2019-10-21	FR_FLD4_2019-10-21	FR_TRP_2019-10-21	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.026	0.027	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.123	0.131	<0.0050	
	Calcium (Ca)-Dissolved (mg/L)	262	263	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	0.00036	0.00048	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.019	0.019	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0701	0.0698	<0.0010	
	Magnesium (Mg)-Dissolved (mg/L)	110	110	<0.0050	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.00199	0.00202	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00125	0.00129	<0.000050	
	Nickel (Ni)-Dissolved (mg/L)	0.00415	0.00410	<0.00050	
	Potassium (K)-Dissolved (mg/L)	3.97	3.96	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)	170	167	<0.050	
	Silicon (Si)-Dissolved (mg/L)	2.23	2.21	<0.050	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.03	3.03	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.222	0.221	<0.00020	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00882	0.00880	<0.000010	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0030	0.0035	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)

## Reference Information

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric







## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 1 of 12

Client: TECK COAL LIMITED (FORDING RIVER)  
 Suite 1000, 205 - 9th Ave S.E.  
 Calgary AB T2G 0R3

Contact: Leilah Tate

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4881669							
<b>WG3199977-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.4		%		85-115	23-OCT-19
<b>WG3199977-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	23-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4881909							
<b>WG3199989-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	23-OCT-19
<b>WG3199989-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-OCT-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4884493							
<b>WG3202894-14</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.3		%		80-120	25-OCT-19
<b>WG3202894-18</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.5		%		80-120	25-OCT-19
<b>WG3202894-13</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-OCT-19
<b>WG3202894-17</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4881029							
<b>WG3199413-7</b>	<b>DUP</b>	<b>L2369147-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-OCT-19
<b>WG3199413-6</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	22-OCT-19
<b>WG3199413-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-OCT-19
<b>WG3199413-8</b>	<b>MS</b>	<b>L2369147-4</b>						
Bromide (Br)			109.7		%		75-125	22-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4885707							
<b>WG3202318-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			90.3		%		80-120	25-OCT-19
<b>WG3202318-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4885707								
WG3202318-2 <b>LCS</b>								
Total Organic Carbon			96.7		%		80-120	25-OCT-19
WG3202318-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	25-OCT-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch      R4881029								
WG3199413-7 <b>DUP</b>								
Chloride (Cl)		L2369147-4	<0.50	RPD-NA	mg/L	N/A	20	22-OCT-19
WG3199413-6 <b>LCS</b>								
Chloride (Cl)			103.5		%		90-110	22-OCT-19
WG3199413-5 <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	22-OCT-19
WG3199413-8 <b>MS</b>								
Chloride (Cl)		L2369147-4	111.9		%		75-125	22-OCT-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch      R4881909								
WG3199989-9 <b>DUP</b>								
Conductivity (@ 25C)		L2369147-2	1450		uS/cm	0.5	10	23-OCT-19
WG3199989-8 <b>LCS</b>								
Conductivity (@ 25C)			101.8		%		90-110	23-OCT-19
WG3199989-7 <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	23-OCT-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch      R4881029								
WG3199413-7 <b>DUP</b>								
Fluoride (F)		L2369147-4	<0.020	RPD-NA	mg/L	N/A	20	22-OCT-19
WG3199413-6 <b>LCS</b>								
Fluoride (F)			106.6		%		90-110	22-OCT-19
WG3199413-5 <b>MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	22-OCT-19
WG3199413-8 <b>MS</b>								
Fluoride (F)		L2369147-4	114.3		%		75-125	22-OCT-19
<b>HG-D-CVAA-CL</b> <b>Water</b>								
Batch      R4884827								
WG3201932-7 <b>DUP</b>								
Mercury (Hg)-Dissolved		L2369147-1	<0.0000050	RPD-NA	mg/L	N/A	20	25-OCT-19
WG3201932-6 <b>LCS</b>								



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4884827</b>							
<b>WG3201932-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.4		%		80-120	25-OCT-19
<b>WG3201932-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	25-OCT-19
<b>WG3201932-8</b>	<b>MS</b>	<b>L2369147-2</b>						
Mercury (Hg)-Dissolved			101.0		%		70-130	25-OCT-19
<b>HG-T-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4884893</b>							
<b>WG3201928-6</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.0		%		80-120	25-OCT-19
<b>WG3201928-5</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	25-OCT-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4884493</b>							
<b>WG3202894-19</b>	<b>DUP</b>	<b>L2369147-4</b>						
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-OCT-19
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	29-OCT-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-OCT-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-OCT-19
<b>WG3202894-14</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.2		%		80-120	25-OCT-19
Antimony (Sb)-Dissolved			107.1		%		80-120	25-OCT-19
Arsenic (As)-Dissolved			105.0		%		80-120	25-OCT-19
Barium (Ba)-Dissolved			101.2		%		80-120	25-OCT-19
Bismuth (Bi)-Dissolved			97.1		%		80-120	25-OCT-19
Boron (B)-Dissolved			103.4		%		80-120	25-OCT-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	25-OCT-19
Calcium (Ca)-Dissolved			98.3		%		80-120	25-OCT-19
Chromium (Cr)-Dissolved			104.1		%		80-120	25-OCT-19
Cobalt (Co)-Dissolved			101.8		%		80-120	25-OCT-19
Copper (Cu)-Dissolved			98.6		%		80-120	25-OCT-19
Iron (Fe)-Dissolved			94.7		%		80-120	25-OCT-19
Lead (Pb)-Dissolved			96.4		%		80-120	25-OCT-19
Lithium (Li)-Dissolved			100.2		%		80-120	25-OCT-19
Magnesium (Mg)-Dissolved			106.1		%		80-120	25-OCT-19
Manganese (Mn)-Dissolved			99.0		%		80-120	25-OCT-19



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884493</b>							
<b>WG3202894-14</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			107.8		%		80-120	25-OCT-19
Nickel (Ni)-Dissolved			99.3		%		80-120	25-OCT-19
Potassium (K)-Dissolved			101.9		%		80-120	25-OCT-19
Selenium (Se)-Dissolved			97.3		%		80-120	25-OCT-19
Silicon (Si)-Dissolved			102.1		%		60-140	25-OCT-19
Silver (Ag)-Dissolved			98.7		%		80-120	25-OCT-19
Sodium (Na)-Dissolved			100.4		%		80-120	25-OCT-19
Strontium (Sr)-Dissolved			100.1		%		80-120	25-OCT-19
Thallium (Tl)-Dissolved			96.9		%		80-120	25-OCT-19
Tin (Sn)-Dissolved			101.8		%		80-120	25-OCT-19
Titanium (Ti)-Dissolved			100.7		%		80-120	25-OCT-19
Uranium (U)-Dissolved			95.5		%		80-120	25-OCT-19
Vanadium (V)-Dissolved			100.7		%		80-120	25-OCT-19
Zinc (Zn)-Dissolved			94.5		%		80-120	25-OCT-19
<b>WG3202894-18</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.3		%		80-120	25-OCT-19
Antimony (Sb)-Dissolved			105.6		%		80-120	25-OCT-19
Arsenic (As)-Dissolved			106.1		%		80-120	25-OCT-19
Barium (Ba)-Dissolved			104.9		%		80-120	25-OCT-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	25-OCT-19
Boron (B)-Dissolved			103.4		%		80-120	25-OCT-19
Cadmium (Cd)-Dissolved			100.1		%		80-120	25-OCT-19
Calcium (Ca)-Dissolved			99.9		%		80-120	25-OCT-19
Chromium (Cr)-Dissolved			103.1		%		80-120	25-OCT-19
Cobalt (Co)-Dissolved			104.6		%		80-120	25-OCT-19
Copper (Cu)-Dissolved			100.8		%		80-120	25-OCT-19
Iron (Fe)-Dissolved			95.4		%		80-120	25-OCT-19
Lead (Pb)-Dissolved			98.2		%		80-120	25-OCT-19
Lithium (Li)-Dissolved			101.1		%		80-120	25-OCT-19
Magnesium (Mg)-Dissolved			107.1		%		80-120	25-OCT-19
Manganese (Mn)-Dissolved			101.5		%		80-120	25-OCT-19
Molybdenum (Mo)-Dissolved			107.8		%		80-120	25-OCT-19
Nickel (Ni)-Dissolved			102.9		%		80-120	25-OCT-19
Potassium (K)-Dissolved			102.5		%		80-120	25-OCT-19



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884493</b>							
<b>WG3202894-18</b>	<b>LCS</b>	<b>TMRM</b>						
Selenium (Se)-Dissolved			96.1		%		80-120	25-OCT-19
Silicon (Si)-Dissolved			101.0		%		60-140	25-OCT-19
Silver (Ag)-Dissolved			96.5		%		80-120	25-OCT-19
Sodium (Na)-Dissolved			101.8		%		80-120	25-OCT-19
Strontium (Sr)-Dissolved			98.6		%		80-120	25-OCT-19
Thallium (Tl)-Dissolved			101.0		%		80-120	25-OCT-19
Tin (Sn)-Dissolved			101.8		%		80-120	25-OCT-19
Titanium (Ti)-Dissolved			99.6		%		80-120	25-OCT-19
Uranium (U)-Dissolved			96.0		%		80-120	25-OCT-19
Vanadium (V)-Dissolved			102.1		%		80-120	25-OCT-19
Zinc (Zn)-Dissolved			97.3		%		80-120	25-OCT-19
<b>WG3202894-13</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4884493</b>							
<b>WG3202894-13 MB</b>								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
<b>WG3202894-17 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884493</b>							
<b>WG3202894-17</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-OCT-19
<b>WG3202894-20</b>	<b>MS</b>	<b>L2369147-4</b>						
Calcium (Ca)-Dissolved			104.3		%		70-130	29-OCT-19
Magnesium (Mg)-Dissolved			105.5		%		70-130	29-OCT-19
Potassium (K)-Dissolved			105.7		%		70-130	29-OCT-19
Sodium (Na)-Dissolved			104.7		%		70-130	29-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888078</b>							
<b>WG3202675-19</b>	<b>DUP</b>	<b>L2369147-3</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	26-OCT-19
<b>WG3202675-10</b>	<b>LCS</b>							
Ammonia as N			112.2		%		85-115	26-OCT-19
<b>WG3202675-14</b>	<b>LCS</b>							
Ammonia as N			109.4		%		85-115	26-OCT-19
<b>WG3202675-18</b>	<b>LCS</b>							
Ammonia as N			110.8		%		85-115	26-OCT-19
<b>WG3202675-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-19
<b>WG3202675-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-19
<b>WG3202675-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-OCT-19
<b>WG3202675-20</b>	<b>MS</b>	<b>L2369147-3</b>						
Ammonia as N			105.8		%		75-125	26-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4881029</b>							
<b>WG3199413-7</b>	<b>DUP</b>	<b>L2369147-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-OCT-19
<b>WG3199413-6</b>	<b>LCS</b>							
Nitrite (as N)			101.8		%		90-110	22-OCT-19
<b>WG3199413-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-OCT-19
<b>WG3199413-8</b>		<b>L2369147-4</b>						



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b> <b>Water</b>								
Batch	R4881029							
WG3199413-8	MS	L2369147-4						
Nitrite (as N)			109.6		%		75-125	22-OCT-19
<b>NO3-L-IC-N-CL</b> <b>Water</b>								
Batch	R4881029							
WG3199413-7	DUP	L2369147-4						
Nitrate (as N)		<0.0050	0.0090	RPD-NA	mg/L	N/A	20	22-OCT-19
WG3199413-6	LCS							
Nitrate (as N)			106.2		%		90-110	22-OCT-19
WG3199413-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	22-OCT-19
WG3199413-8	MS	L2369147-4						
Nitrate (as N)			114.4		%		75-125	22-OCT-19
<b>ORP-CL</b> <b>Water</b>								
Batch	R4879473							
WG3198303-3	CRM	CL-ORP						
ORP			222		mV		210-230	22-OCT-19
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4880811							
WG3198884-10	LCS							
Phosphorus (P)-Total			107.6		%		80-120	23-OCT-19
WG3198884-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-OCT-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4881909							
WG3199989-9	DUP	L2369147-2						
pH		7.93	7.93	J	pH	0.00	0.2	23-OCT-19
WG3199989-8	LCS							
pH			7.00		pH		6.9-7.1	23-OCT-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4879404							
WG3197936-7	LCS							
Orthophosphate-Dissolved (as P)			101.4		%		80-120	22-OCT-19
WG3197936-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-OCT-19
WG3197936-9	MS	L2369147-3						





## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4879404</b>							
<b>WG3197936-9</b>	<b>MS</b>	<b>L2369147-3</b>						
Orthophosphate-Dissolved (as P)			101.6		%		70-130	22-OCT-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4881029</b>							
<b>WG3199413-7</b>	<b>DUP</b>	<b>L2369147-4</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	22-OCT-19
<b>WG3199413-6</b>	<b>LCS</b>							
Sulfate (SO4)			108.2		%		90-110	22-OCT-19
<b>WG3199413-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-OCT-19
<b>WG3199413-8</b>	<b>MS</b>	<b>L2369147-4</b>						
Sulfate (SO4)			116.5		%		75-125	22-OCT-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4881606</b>							
<b>WG3198728-5</b>	<b>LCS</b>							
Total Dissolved Solids			102.2		%		85-115	23-OCT-19
<b>WG3198728-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-OCT-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4880647</b>							
<b>WG3198993-7</b>	<b>DUP</b>	<b>L2369147-4</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	23-OCT-19
<b>WG3198993-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	23-OCT-19
<b>WG3198993-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-OCT-19
<b>WG3198993-8</b>	<b>MS</b>	<b>L2369147-4</b>						
Total Kjeldahl Nitrogen			107.8		%		70-130	23-OCT-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884335</b>							
<b>WG3200210-6</b>	<b>LCS</b>							
Total Suspended Solids			97.8		%		85-115	24-OCT-19
<b>WG3200210-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	24-OCT-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4879763</b>							
<b>WG3198349-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	22-OCT-19
<b>WG3198349-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-OCT-19

# Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2369147

Report Date: 31-OCT-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	21-OCT-19 13:15	22-OCT-19 12:45	0.25	24	hours	EHTR-FM
	2	21-OCT-19 13:20	22-OCT-19 12:45	0.25	24	hours	EHTR-FM
	3	21-OCT-19 13:25	22-OCT-19 12:45	0.25	23	hours	EHTR-FM
	4	21-OCT-19 13:30	22-OCT-19 12:45	0.25	23	hours	EHTR-FM
pH							
	1	21-OCT-19 13:15	23-OCT-19 10:00	0.25	45	hours	EHTR-FM
	2	21-OCT-19 13:20	23-OCT-19 10:00	0.25	45	hours	EHTR-FM
	3	21-OCT-19 13:25	23-OCT-19 10:00	0.25	45	hours	EHTR-FM
	4	21-OCT-19 13:30	23-OCT-19 10:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2369147 were received on 22-OCT-19 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

TURNAROUND TIME:

Regular

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Teck Coal			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leilah Tate			Lab Contact	Lyudmyla Shvets			Email 1:	Leilah.Tate@teck.com	X	X	X
Email	Leilah.Tate@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
								Email 4:	tom.jeffery@teck.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 5:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-604-831-3830			Phone Number	403 407 1794			PO number	VPO00632083			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED													
								TECK COAL ROUTINE CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered	F	L	Lab	Field	N	None	
FRKB-2-2019-10-21	FR-KB-2	WG	N	2019-10-21	13:15	G	6	1	1	1	1	1	1	1							
FRDC4-2019-10-21	FR-DC4	WG	N		13:20	G	6	1	1	1	1	1	1	1							
FR-FLO4-2019-10-21	FR-FLO4	WG	N		13:25	G	6	1	1	1	1	1	1	1							
FR-TRP-2019-10-21	FR-TRP	WG	N		13:30	G	3	1													

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
All samples are field filtered and preserved as required.				10/22 8:30

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin	Mobile #	250 464 5914
Sampler's Signature		Date/Time	2019-10-21

6c



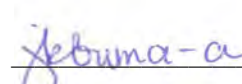
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Scott Roughead  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 23-OCT-19  
Report Date: 06-NOV-19 14:31 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2370485  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191022-1355  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2370485-1	L2370485-2	L2370485-3
		Description	WG	WG	WG
		Sampled Date	22-OCT-19	22-OCT-19	22-OCT-19
		Sampled Time	12:45	10:40	12:00
		Client ID	FR_HMW2_QTR_2 019-10-07_N	FR_HMW5_QTR_2 019-10-07_N	FR_TRP_QTR_201 9-10-07_N
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	2730	339	<2.0	
	Hardness (as CaCO3) (mg/L)	2300	182	<0.50	
	pH (pH)	7.92	8.27	6.12	
	ORP (mV)	346	235	484	
	Total Suspended Solids (mg/L)	26.4	1.6	<1.0	
	Total Dissolved Solids (mg/L)	3220 <sup>DLHC</sup>	230 <sup>DLHC</sup>	<10	
	Turbidity (NTU)	11.9	1.17	<0.10	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	28.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	358	138	<1.0	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	358	138	<1.0	
	Ammonia as N (mg/L)	<0.0050	0.0605	0.0276 <sup>RRV</sup>	
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.050	
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	0.61	<0.50	
	Fluoride (F) (mg/L)	0.25 <sup>DLHC</sup>	0.429	<0.020	
	Ion Balance (%)	96.3	99.0	0.0	
	Nitrate (as N) (mg/L)	57.5 <sup>DLHC</sup>	0.0081	<0.0050	
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	0.075	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0169	0.0184	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0302	0.0155	<0.0020	
	Sulfate (SO4) (mg/L)	1760 <sup>DLHC</sup>	57.4	<0.30	
	Anion Sum (meq/L)	48.0	4.00	<0.10	
	Cation Sum (meq/L)	46.2	3.96	<0.10	
	Cation - Anion Balance (%)	-1.9	-0.5	0.0	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.60	0.57	<0.50
Total Organic Carbon (mg/L)		1.02	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0057	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0139	0.199	<0.00010	
	Beryllium (Be)-Dissolved (ug/L)	<0.040 <sup>DLA</sup>	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2370485-1	L2370485-2	L2370485-3
		Description	WG	WG	WG
		Sampled Date	22-OCT-19	22-OCT-19	22-OCT-19
		Sampled Time	12:45	10:40	12:00
		Client ID	FR_HMW2_QTR_2 019-10-07_N	FR_HMW5_QTR_2 019-10-07_N	FR_TRP_QTR_201 9-10-07_N
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.050	0.030	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.241	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		465	40.8	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00020 <sup>DLA</sup>	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		0.25	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00169	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.020 <sup>DLA</sup>	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.00010 <sup>DLA</sup>	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.132	0.148	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		277	19.5	<0.10
	Manganese (Mn)-Dissolved (mg/L)		0.0482	0.0476	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00160	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.0160	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		7.48	0.669	<0.050
	Selenium (Se)-Dissolved (ug/L)		745	1.36	<0.050
	Silicon (Si)-Dissolved (mg/L)		1.69	2.51	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000020 <sup>DLA</sup>	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		1.72	6.79	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.249	0.368	<0.00020
	Thallium (Tl)-Dissolved (mg/L)		0.000053	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00020 <sup>DLA</sup>	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00990	0.000032	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.0010 <sup>DLA</sup>	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0106	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLA	Detection Limit adjusted for required dilution		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
RRV	Reported Result Verified By Repeat Analysis		
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulfate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			

## Reference Information

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20191022-1355

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 1 of 8

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4881669							
<b>WG3199977-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.2		%		85-115	23-OCT-19
<b>WG3199977-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	23-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4884003							
<b>WG3201255-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	24-OCT-19
<b>WG3201255-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4895553							
<b>WG3208049-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.7		%		80-120	01-NOV-19
<b>WG3208049-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4882487							
<b>WG3200351-8</b>	<b>LCS</b>							
Bromide (Br)			103.6		%		85-115	23-OCT-19
<b>WG3200351-7</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4887446							
<b>WG3203204-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.7		%		80-120	27-OCT-19
<b>WG3203204-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4887446							
<b>WG3203204-6</b>	<b>LCS</b>							
Total Organic Carbon			103.6		%		80-120	27-OCT-19
<b>WG3203204-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-OCT-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4882487							
<b>WG3200351-8</b>	<b>LCS</b>							
Chloride (Cl)			102.2		%		90-110	23-OCT-19
<b>WG3200351-7</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-OCT-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4884003							
<b>WG3201255-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.7		%		90-110	24-OCT-19
<b>WG3201255-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-OCT-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4882487							
<b>WG3200351-8</b>	<b>LCS</b>							
Fluoride (F)			104.4		%		90-110	23-OCT-19
<b>WG3200351-7</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-OCT-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4888449							
<b>WG3202523-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.7		%		80-120	28-OCT-19
<b>WG3202523-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-OCT-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4895553							
<b>WG3208049-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.9		%		80-120	01-NOV-19
Antimony (Sb)-Dissolved			106.0		%		80-120	01-NOV-19
Arsenic (As)-Dissolved			104.6		%		80-120	01-NOV-19
Barium (Ba)-Dissolved			100.1		%		80-120	01-NOV-19
Bismuth (Bi)-Dissolved			100.2		%		80-120	01-NOV-19
Boron (B)-Dissolved			100.1		%		80-120	01-NOV-19
Cadmium (Cd)-Dissolved			102.5		%		80-120	01-NOV-19
Calcium (Ca)-Dissolved			99.3		%		80-120	01-NOV-19
Chromium (Cr)-Dissolved			105.2		%		80-120	01-NOV-19
Cobalt (Co)-Dissolved			106.5		%		80-120	01-NOV-19
Copper (Cu)-Dissolved			103.8		%		80-120	01-NOV-19



## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4895553</b>							
<b>WG3208049-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			102.6		%		80-120	01-NOV-19
Lead (Pb)-Dissolved			100.8		%		80-120	01-NOV-19
Lithium (Li)-Dissolved			96.6		%		80-120	01-NOV-19
Magnesium (Mg)-Dissolved			105.9		%		80-120	01-NOV-19
Manganese (Mn)-Dissolved			107.1		%		80-120	01-NOV-19
Molybdenum (Mo)-Dissolved			102.7		%		80-120	01-NOV-19
Nickel (Ni)-Dissolved			105.3		%		80-120	01-NOV-19
Potassium (K)-Dissolved			108.6		%		80-120	01-NOV-19
Selenium (Se)-Dissolved			100.7		%		80-120	01-NOV-19
Silicon (Si)-Dissolved			101.3		%		60-140	01-NOV-19
Silver (Ag)-Dissolved			100.4		%		80-120	01-NOV-19
Sodium (Na)-Dissolved			108.1		%		80-120	01-NOV-19
Strontium (Sr)-Dissolved			100.4		%		80-120	01-NOV-19
Thallium (Tl)-Dissolved			99.4		%		80-120	01-NOV-19
Tin (Sn)-Dissolved			101.7		%		80-120	01-NOV-19
Titanium (Ti)-Dissolved			104.9		%		80-120	01-NOV-19
Uranium (U)-Dissolved			102.4		%		80-120	01-NOV-19
Vanadium (V)-Dissolved			107.5		%		80-120	01-NOV-19
Zinc (Zn)-Dissolved			106.4		%		80-120	01-NOV-19
<b>WG3208049-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19



## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4895553</b>							
<b>WG3208049-1</b>	<b>MB</b>	<b>NP</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4889445</b>							
<b>WG3203528-10</b>	<b>LCS</b>							
Ammonia as N			107.8		%		85-115	29-OCT-19
<b>WG3203528-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4882487</b>							
<b>WG3200351-8</b>	<b>LCS</b>							
Nitrite (as N)			103.6		%		90-110	23-OCT-19
<b>WG3200351-7</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-OCT-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4882487</b>							
<b>WG3200351-8</b>	<b>LCS</b>							
Nitrate (as N)			102.6		%		90-110	23-OCT-19
<b>WG3200351-7</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-OCT-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4883661							
WG3200864-1	CRM	CL-ORP						
ORP			219		mV		210-230	24-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4882293							
WG3200423-18	LCS							
Phosphorus (P)-Total			106.3		%		80-120	24-OCT-19
WG3200423-22	LCS							
Phosphorus (P)-Total			109.0		%		80-120	24-OCT-19
WG3200423-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-OCT-19
WG3200423-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4884003							
WG3201255-8	LCS							
pH			7.00		pH		6.9-7.1	24-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4881104							
WG3199329-22	LCS							
Orthophosphate-Dissolved (as P)			106.0		%		80-120	23-OCT-19
WG3199329-21	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	23-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4882487							
WG3200351-8	LCS							
Sulfate (SO4)			104.2		%		90-110	23-OCT-19
WG3200351-7	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4884135							
WG3200013-2	LCS							
Total Dissolved Solids			103.8		%		85-115	24-OCT-19
WG3200013-1	MB							
Total Dissolved Solids			<10		mg/L		10	24-OCT-19
<b>TKN-L-F-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch R4882053								
<b>WG3200320-38 LCS</b>								
Total Kjeldahl Nitrogen			103.2		%		75-125	24-OCT-19
<b>WG3200320-37 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-OCT-19
Batch R4884311								
<b>WG3201558-2 LCS</b>								
Total Kjeldahl Nitrogen			101.6		%		75-125	25-OCT-19
<b>WG3201558-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-OCT-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch R4888029								
<b>WG3200835-10 LCS</b>								
Total Suspended Solids			92.9		%		85-115	25-OCT-19
<b>WG3200835-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	25-OCT-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch R4881160								
<b>WG3199566-14 LCS</b>								
Turbidity			96.5		%		85-115	23-OCT-19
<b>WG3199566-13 MB</b>								
Turbidity			<0.10		NTU		0.1	23-OCT-19

# Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2370485

Report Date: 06-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	22-OCT-19 12:45	24-OCT-19 11:00	0.25	46	hours	EHTR-FM
	2	22-OCT-19 10:40	24-OCT-19 11:00	0.25	48	hours	EHTR-FM
	3	22-OCT-19 12:00	24-OCT-19 11:00	0.25	47	hours	EHTR-FM
pH	1	22-OCT-19 12:45	24-OCT-19 10:00	0.25	45	hours	EHTR-FM
	2	22-OCT-19 10:40	24-OCT-19 10:00	0.25	47	hours	EHTR-FM
	3	22-OCT-19 12:00	24-OCT-19 10:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2370485 were received on 23-OCT-19 09:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191022-1355

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Neil MacDonald			Lab Contact	Lyudmyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	Neil.MacDonald@teck.com			Email	Lyudmyln.Shvets@ALSGlobal.com			Email 2:	brit.anderson@teck.com	X	X	X
Address	PO Box 100			Address	2559 29 Street NE			Email 3:	scott.roughhead@teck.com	X	X	X
								Email 4:	teckcoal@equilonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:				
Phone Number	1-250-865-5204			Phone Number	403 407 1794			PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

F: Field, L: Lab, N: None



L2370485-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS Package-TKN/TOC						
FR_HMW2_QTR_2019-10-07_N	FR_HMW2	WG		2019/10/22	12:45	G	5	1	1	1	1	1						
FR_HMW5_QTR_2019-10-07_N	FR_HMW5	WG		2019/10/22	10:40	G	5	1	1	1	1	1						
FR_TRP_QTR_2019-10-07_N	FR_TRP	WG		2019/10/22	12:00	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	October 22 2019		10/23 9:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Britt Anderson	4039907060
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature	Date/Time
		October 22 2019

8c



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Scott Roughead  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 24-OCT-19  
Report Date: 01-NOV-19 15:20 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2371345  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191023-1350  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2371345-1 WG 23-OCT-19 11:20 FR_DC1_QTR_201 9-10-07_N	L2371345-2 WG 23-OCT-19 12:47 FR_DC2_QTR_201 9-10-07_N	L2371345-3 WG 23-OCT-19 12:00 FR_FLD_QTR_201 9-10-07_N	L2371345-4 WG 23-OCT-19 11:20 FR_HMW1D_QTR _2019-10-07_N	L2371345-5 WG 23-OCT-19 12:00 FR_HMW1S_QTR_2019-10-07_N
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	3230	775	<2.0	3340	3140
	Hardness (as CaCO3) (mg/L)	2500	462	<0.50	2570	2460
	pH (pH)	7.85	8.16	5.58	7.85	7.94
	ORP (mV)	460	400	406	433	390
	Total Suspended Solids (mg/L)	4.4	8.2	<1.0	6.2	3.2
	Total Dissolved Solids (mg/L)	3970 <sup>DLHC</sup>	606 <sup>DLHC</sup>	<10	3810 <sup>DLHC</sup>	3700 <sup>DLHC</sup>
	Turbidity (NTU)	0.92	7.57	<0.10	0.80	0.38
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	30.2	5.9	1.2	24.1	21.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	430	197	<1.0	426	416
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	430	197	<1.0	426	416
	Ammonia as N (mg/L)	0.0510	0.156	0.0069 <sup>RRV</sup>	0.0757	0.807 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.050	<0.25 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	2.5	<0.50	<0.50	2.6 <sup>DLHC</sup>	<5.0 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.22	0.277	<0.020	0.22 <sup>DLHC</sup>	0.27 <sup>DLHC</sup>
	Ion Balance (%)	90.5	97.3	0.0	93.0 <sup>DLHC</sup>	93.2 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)	122	9.33	<0.0050	122 <sup>DLHC</sup>	123 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	0.0154	0.0080	<0.0010	0.0175 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	0.069 <sup>TKNI</sup>	<0.050	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0046	<0.0010	<0.0010	0.0048	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0043	0.0119	<0.0020	0.0042 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	1830	240	<0.30	1840	1730
	Anion Sum (meq/L)	55.4	9.60	<0.10	55.6	53.1
	Cation Sum (meq/L)	50.1	9.34	<0.10	51.7	49.5
	Cation - Anion Balance (%)	-5.0	-1.4	0.0	-3.6	-3.5
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.94	<0.50	<0.50	0.89
Total Organic Carbon (mg/L)		0.78	<0.50	<0.50	1.02	0.80
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0042	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00039	0.00019	<0.00010	0.00038	0.00033
	Arsenic (As)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	0.00020	<0.00010	<0.00020 <sup>DLM</sup>	<0.00020 <sup>DLM</sup>
	Barium (Ba)-Dissolved (mg/L)	0.0130	0.0384	<0.00010	0.0130	0.0107
	Beryllium (Be)-Dissolved (ug/L)	<0.040 <sup>DLA</sup>	<0.020	<0.020	<0.040 <sup>DLM</sup>	<0.040 <sup>DLM</sup>
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLM</sup>	<0.00010 <sup>DLM</sup>

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2371345-6 WG 23-OCT-19 12:47 FR_HMW3_QTR_2 019-10-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	781			
	Hardness (as CaCO3) (mg/L)	466			
	pH (pH)	8.20			
	ORP (mV)	302			
	Total Suspended Solids (mg/L)	6.4			
	Total Dissolved Solids (mg/L)	608	DLHC		
	Turbidity (NTU)	6.97			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	192			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	192			
	Ammonia as N (mg/L)	0.113			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	0.275			
	Ion Balance (%)	99.4			
	Nitrate (as N) (mg/L)	9.25			
	Nitrite (as N) (mg/L)	0.0087			
	Total Kjeldahl Nitrogen (mg/L)	0.155	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0089			
	Sulfate (SO4) (mg/L)	239			
	Anion Sum (meq/L)	9.49			
	Cation Sum (meq/L)	9.43			
	Cation - Anion Balance (%)	-0.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.55			
	Total Organic Carbon (mg/L)	0.59			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0034			
	Antimony (Sb)-Dissolved (mg/L)	0.00019			
	Arsenic (As)-Dissolved (mg/L)	0.00014			
	Barium (Ba)-Dissolved (mg/L)	0.0368			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2371345-1 WG 23-OCT-19 11:20 FR_DC1_QTR_201 9-10-07_N	L2371345-2 WG 23-OCT-19 12:47 FR_DC2_QTR_201 9-10-07_N	L2371345-3 WG 23-OCT-19 12:00 FR_FLD_QTR_201 9-10-07_N	L2371345-4 WG 23-OCT-19 11:20 FR_HMW1D_QTR _2019-10-07_N	L2371345-5 WG 23-OCT-19 12:00 FR_HMW1S_QTR_ 2019-10-07_N	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.050	0.016	<0.010	0.047	0.045
	Cadmium (Cd)-Dissolved (ug/L)	0.075	0.0281	<0.0050	0.104	0.119
	Calcium (Ca)-Dissolved (mg/L)	534	112	<0.050	548	523
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLM</sup>	<0.00020 <sup>DLM</sup>
	Cobalt (Co)-Dissolved (ug/L)	4.30	0.17	<0.10	4.48	4.50
	Copper (Cu)-Dissolved (mg/L)	<0.00040 <sup>DLA</sup>	<0.00020	<0.00020	<0.00040 <sup>DLM</sup>	0.00047 <sup>DLM</sup>
	Iron (Fe)-Dissolved (mg/L)	<0.020 <sup>DLA</sup>	0.316	<0.010	<0.020 <sup>DLM</sup>	<0.020 <sup>DLM</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLM</sup>	<0.00010 <sup>DLM</sup>
	Lithium (Li)-Dissolved (mg/L)	0.0808	0.0245	<0.0010	0.0782	0.0782
	Magnesium (Mg)-Dissolved (mg/L)	282	44.1	<0.10	293	281
	Manganese (Mn)-Dissolved (mg/L)	0.654	0.0895	<0.00010	0.680	0.370
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00074	0.00103	<0.000050	0.00077	0.00088
	Nickel (Ni)-Dissolved (mg/L)	0.0294	0.00124	<0.00050	0.0309	0.0407
	Potassium (K)-Dissolved (mg/L)	5.84	1.97	<0.050	6.20	7.18
	Selenium (Se)-Dissolved (ug/L)	5.91	59.2	<0.050	5.89	109
	Silicon (Si)-Dissolved (mg/L)	2.65	1.43	<0.050	2.69	2.27
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000020 <sup>DLM</sup>	<0.000020 <sup>DLM</sup>
	Sodium (Na)-Dissolved (mg/L)	2.05	1.16	<0.050	2.11	2.03
	Strontium (Sr)-Dissolved (mg/L)	0.303	0.127	<0.00020	0.334	0.299
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>	0.000011	<0.000010	<0.000020 <sup>DLM</sup>	0.000027 <sup>DLM</sup>
	Tin (Sn)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00020 <sup>DLM</sup>	<0.00020 <sup>DLM</sup>
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0109	0.00179	<0.000010	0.0111	0.0107 <sup>DLM</sup>
	Vanadium (V)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLM</sup>	<0.0010 <sup>DLM</sup>
	Zinc (Zn)-Dissolved (mg/L)	0.0064	0.0010	<0.0010	0.0067	0.0051

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2371345-6 WG 23-OCT-19 12:47 FR_HMW3_QTR_2 019-10-07_N			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.014			
	Cadmium (Cd)-Dissolved (ug/L)	0.0335			
	Calcium (Ca)-Dissolved (mg/L)	114			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.15			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.254			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0224			
	Magnesium (Mg)-Dissolved (mg/L)	44.0			
	Manganese (Mn)-Dissolved (mg/L)	0.0762			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00103			
	Nickel (Ni)-Dissolved (mg/L)	0.00132			
	Potassium (K)-Dissolved (mg/L)	1.95			
	Selenium (Se)-Dissolved (ug/L)	60.6			
	Silicon (Si)-Dissolved (mg/L)	1.47			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.07			
	Strontium (Sr)-Dissolved (mg/L)	0.128			
	Thallium (Tl)-Dissolved (mg/L)	0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00181			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0013			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2371345-1, -2, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			

## Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191023-1350

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 1 of 12

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884010</b>							
<b>WG3201250-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.9		%		85-115	24-OCT-19
<b>WG3201250-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	24-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888006</b>							
<b>WG3203253-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.5		%		85-115	25-OCT-19
<b>WG3203253-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.1		%		85-115	25-OCT-19
<b>WG3203253-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-OCT-19
<b>WG3203253-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888159</b>							
<b>WG3202640-3</b>	<b>DUP</b>	<b>L2371345-1</b>						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	27-OCT-19
<b>WG3202640-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			86.7		%		80-120	27-OCT-19
<b>WG3202640-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-OCT-19
<b>WG3202640-4</b>	<b>MS</b>	<b>L2371345-2</b>						
Beryllium (Be)-Dissolved			94.6		%		70-130	27-OCT-19
<b>Batch</b>	<b>R4889270</b>							
<b>WG3203236-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.3		%		80-120	28-OCT-19
<b>WG3203236-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4884134</b>							
<b>WG3201511-6</b>	<b>LCS</b>							
Bromide (Br)			106.2		%		85-115	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4888971</b>							
<b>WG3204663-7</b>	<b>DUP</b>	<b>L2371345-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-OCT-19
<b>WG3204663-8</b>	<b>MS</b>	<b>L2371345-2</b>						
Dissolved Organic Carbon			90.9		%		70-130	28-OCT-19
<b>Batch</b>	<b>R4889000</b>							
<b>WG3204701-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.4		%		80-120	28-OCT-19
<b>WG3204701-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4889000</b>							
<b>WG3204701-2</b>	<b>LCS</b>							
Total Organic Carbon			100.8		%		80-120	28-OCT-19
<b>WG3204701-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-OCT-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4884134</b>							
<b>WG3201511-6</b>	<b>LCS</b>							
Chloride (Cl)			104.0		%		90-110	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4888006</b>							
<b>WG3203253-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.9		%		90-110	25-OCT-19
<b>WG3203253-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.7		%		90-110	25-OCT-19
<b>WG3203253-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-OCT-19
<b>WG3203253-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-OCT-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4884134</b>							
<b>WG3201511-6</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4889334</b>							
<b>WG3203886-7</b>	<b>DUP</b>	<b>L2371345-5</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	29-OCT-19
<b>WG3203886-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.1		%		80-120	29-OCT-19
<b>WG3203886-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	29-OCT-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4888159</b>							
<b>WG3202640-3</b>	<b>DUP</b>	<b>L2371345-1</b>						
Antimony (Sb)-Dissolved		0.00039	0.00038		mg/L	1.3	20	27-OCT-19
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-OCT-19
Barium (Ba)-Dissolved		0.0130	0.0130		mg/L	0.3	20	27-OCT-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-OCT-19
Boron (B)-Dissolved		0.050	0.047		mg/L	5.6	20	27-OCT-19
Cadmium (Cd)-Dissolved		0.000075	0.000082		mg/L	8.7	20	27-OCT-19
Calcium (Ca)-Dissolved		534	544		mg/L	1.8	20	27-OCT-19
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-OCT-19
Cobalt (Co)-Dissolved		0.00430	0.00438		mg/L	1.8	20	27-OCT-19
Copper (Cu)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	27-OCT-19
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	27-OCT-19
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-OCT-19
Lithium (Li)-Dissolved		0.0808	0.0771		mg/L	4.7	20	27-OCT-19
Magnesium (Mg)-Dissolved		282	285		mg/L	1.0	20	27-OCT-19
Manganese (Mn)-Dissolved		0.654	0.665		mg/L	1.6	20	27-OCT-19
Molybdenum (Mo)-Dissolved		0.00074	0.00072		mg/L	3.6	20	27-OCT-19
Nickel (Ni)-Dissolved		0.0294	0.0299		mg/L	1.8	20	27-OCT-19
Potassium (K)-Dissolved		5.84	5.98		mg/L	2.3	20	27-OCT-19
Selenium (Se)-Dissolved		0.00591	0.00566		mg/L	4.3	20	27-OCT-19
Silicon (Si)-Dissolved		2.65	2.57		mg/L	2.7	20	27-OCT-19
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-OCT-19
Sodium (Na)-Dissolved		2.05	2.09		mg/L	2.0	20	27-OCT-19
Strontium (Sr)-Dissolved		0.303	0.314		mg/L	3.4	20	27-OCT-19
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-OCT-19
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-OCT-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-OCT-19
Uranium (U)-Dissolved		0.0109	0.0110		mg/L	0.2	20	27-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888159</b>							
<b>WG3202640-3</b>	<b>DUP</b>	<b>L2371345-1</b>						
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-OCT-19
Zinc (Zn)-Dissolved		0.0064	0.0072		mg/L	12	20	27-OCT-19
<b>WG3202640-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.7		%		80-120	27-OCT-19
Antimony (Sb)-Dissolved			101.5		%		80-120	27-OCT-19
Arsenic (As)-Dissolved			101.3		%		80-120	27-OCT-19
Barium (Ba)-Dissolved			108.0		%		80-120	27-OCT-19
Bismuth (Bi)-Dissolved			88.5		%		80-120	27-OCT-19
Boron (B)-Dissolved			90.0		%		80-120	27-OCT-19
Cadmium (Cd)-Dissolved			99.98		%		80-120	27-OCT-19
Calcium (Ca)-Dissolved			94.2		%		80-120	27-OCT-19
Chromium (Cr)-Dissolved			97.4		%		80-120	27-OCT-19
Cobalt (Co)-Dissolved			96.6		%		80-120	27-OCT-19
Copper (Cu)-Dissolved			96.0		%		80-120	27-OCT-19
Iron (Fe)-Dissolved			98.4		%		80-120	27-OCT-19
Lead (Pb)-Dissolved			90.0		%		80-120	27-OCT-19
Lithium (Li)-Dissolved			86.0		%		80-120	27-OCT-19
Magnesium (Mg)-Dissolved			93.4		%		80-120	27-OCT-19
Manganese (Mn)-Dissolved			101.0		%		80-120	27-OCT-19
Molybdenum (Mo)-Dissolved			102.1		%		80-120	27-OCT-19
Nickel (Ni)-Dissolved			95.7		%		80-120	27-OCT-19
Potassium (K)-Dissolved			97.9		%		80-120	27-OCT-19
Selenium (Se)-Dissolved			105.4		%		80-120	27-OCT-19
Silicon (Si)-Dissolved			105.4		%		60-140	27-OCT-19
Silver (Ag)-Dissolved			97.0		%		80-120	27-OCT-19
Sodium (Na)-Dissolved			97.7		%		80-120	27-OCT-19
Strontium (Sr)-Dissolved			96.2		%		80-120	27-OCT-19
Thallium (Tl)-Dissolved			89.4		%		80-120	27-OCT-19
Tin (Sn)-Dissolved			100.4		%		80-120	27-OCT-19
Titanium (Ti)-Dissolved			98.8		%		80-120	27-OCT-19
Uranium (U)-Dissolved			85.3		%		80-120	27-OCT-19
Vanadium (V)-Dissolved			97.5		%		80-120	27-OCT-19
Zinc (Zn)-Dissolved			96.4		%		80-120	27-OCT-19
<b>WG3202640-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-OCT-19





## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888159</b>							
<b>WG3202640-1</b>	<b>MB</b>	<b>NP</b>						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-OCT-19
<b>WG3202640-4</b>	<b>MS</b>	<b>L2371345-2</b>						
Aluminum (Al)-Dissolved			93.0		%		70-130	27-OCT-19
Antimony (Sb)-Dissolved			101.4		%		70-130	27-OCT-19
Arsenic (As)-Dissolved			99.7		%		70-130	27-OCT-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	27-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4888159</b>							
<b>WG3202640-4</b>	<b>MS</b>	<b>L2371345-2</b>						
Bismuth (Bi)-Dissolved			80.1		%		70-130	27-OCT-19
Boron (B)-Dissolved			96.7		%		70-130	27-OCT-19
Cadmium (Cd)-Dissolved			101.6		%		70-130	27-OCT-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	27-OCT-19
Chromium (Cr)-Dissolved			99.4		%		70-130	27-OCT-19
Cobalt (Co)-Dissolved			96.1		%		70-130	27-OCT-19
Copper (Cu)-Dissolved			95.3		%		70-130	27-OCT-19
Iron (Fe)-Dissolved			98.1		%		70-130	27-OCT-19
Lead (Pb)-Dissolved			86.8		%		70-130	27-OCT-19
Lithium (Li)-Dissolved			94.0		%		70-130	27-OCT-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	27-OCT-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	27-OCT-19
Molybdenum (Mo)-Dissolved			101.5		%		70-130	27-OCT-19
Nickel (Ni)-Dissolved			95.2		%		70-130	27-OCT-19
Potassium (K)-Dissolved			93.9		%		70-130	27-OCT-19
Selenium (Se)-Dissolved			N/A	MS-B	%		-	27-OCT-19
Silicon (Si)-Dissolved			95.7		%		70-130	27-OCT-19
Silver (Ag)-Dissolved			97.6		%		70-130	27-OCT-19
Sodium (Na)-Dissolved			100.0		%		70-130	27-OCT-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	27-OCT-19
Thallium (Tl)-Dissolved			86.1		%		70-130	27-OCT-19
Tin (Sn)-Dissolved			99.99		%		70-130	27-OCT-19
Titanium (Ti)-Dissolved			95.6		%		70-130	27-OCT-19
Uranium (U)-Dissolved			82.9		%		70-130	27-OCT-19
Vanadium (V)-Dissolved			99.5		%		70-130	27-OCT-19
Zinc (Zn)-Dissolved			95.2		%		70-130	27-OCT-19
<b>Batch</b>	<b>R4889270</b>							
<b>WG3203236-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	28-OCT-19
Antimony (Sb)-Dissolved			105.8		%		80-120	28-OCT-19
Arsenic (As)-Dissolved			103.4		%		80-120	28-OCT-19
Barium (Ba)-Dissolved			98.2		%		80-120	28-OCT-19
Bismuth (Bi)-Dissolved			95.6		%		80-120	28-OCT-19
Boron (B)-Dissolved			98.7		%		80-120	28-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4889270</b>							
<b>WG3203236-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			99.5		%		80-120	28-OCT-19
Calcium (Ca)-Dissolved			96.4		%		80-120	28-OCT-19
Chromium (Cr)-Dissolved			102.1		%		80-120	28-OCT-19
Cobalt (Co)-Dissolved			99.3		%		80-120	28-OCT-19
Copper (Cu)-Dissolved			98.2		%		80-120	28-OCT-19
Iron (Fe)-Dissolved			91.7		%		80-120	28-OCT-19
Lead (Pb)-Dissolved			100.6		%		80-120	28-OCT-19
Lithium (Li)-Dissolved			94.9		%		80-120	28-OCT-19
Magnesium (Mg)-Dissolved			99.3		%		80-120	28-OCT-19
Manganese (Mn)-Dissolved			102.0		%		80-120	28-OCT-19
Molybdenum (Mo)-Dissolved			106.3		%		80-120	28-OCT-19
Nickel (Ni)-Dissolved			101.1		%		80-120	28-OCT-19
Potassium (K)-Dissolved			104.5		%		80-120	28-OCT-19
Selenium (Se)-Dissolved			101.1		%		80-120	28-OCT-19
Silicon (Si)-Dissolved			101.6		%		60-140	28-OCT-19
Silver (Ag)-Dissolved			98.9		%		80-120	28-OCT-19
Sodium (Na)-Dissolved			106.2		%		80-120	28-OCT-19
Strontium (Sr)-Dissolved			113.7		%		80-120	28-OCT-19
Thallium (Tl)-Dissolved			99.7		%		80-120	28-OCT-19
Tin (Sn)-Dissolved			104.0		%		80-120	28-OCT-19
Titanium (Ti)-Dissolved			100.4		%		80-120	28-OCT-19
Uranium (U)-Dissolved			102.7		%		80-120	28-OCT-19
Vanadium (V)-Dissolved			100.2		%		80-120	28-OCT-19
Zinc (Zn)-Dissolved			93.4		%		80-120	28-OCT-19
<b>WG3203236-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4889270</b>							
<b>WG3203236-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
<b>Batch</b>	<b>R4889303</b>							
<b>WG3202640-3</b>	<b>DUP</b>	<b>L2371345-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4892248</b>							
<b>WG3206395-11</b>	<b>DUP</b>	<b>L2371345-3</b>						
Ammonia as N		0.0069	0.0070		mg/L	1.4	20	30-OCT-19
<b>WG3206395-10</b>	<b>LCS</b>							
Ammonia as N			96.8		%		85-115	30-OCT-19
<b>WG3206395-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-OCT-19
<b>WG3206395-12</b>	<b>MS</b>	<b>L2371345-3</b>						
Ammonia as N			108.9		%		75-125	30-OCT-19



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4884134							
<b>WG3201511-6</b>	<b>LCS</b>							
Nitrite (as N)			103.7		%		90-110	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-OCT-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4884134							
<b>WG3201511-6</b>	<b>LCS</b>							
Nitrate (as N)			105.1		%		90-110	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4883661							
<b>WG3200864-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			216		mV		210-230	24-OCT-19
<b>WG3200864-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	24-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4884566							
<b>WG3201630-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.1		%		80-120	25-OCT-19
<b>WG3201630-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4888006							
<b>WG3203253-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	25-OCT-19
<b>WG3203253-8</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	25-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4883326							
<b>WG3200572-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	24-OCT-19
<b>WG3200572-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4884134							
<b>WG3201511-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.1		%		90-110	24-OCT-19
<b>WG3201511-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	24-OCT-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4889928							
<b>WG3204372-3</b>	<b>DUP</b>	<b>L2371345-1</b>						
Total Dissolved Solids		3970	3790		mg/L	4.6	20	29-OCT-19
<b>WG3204372-2</b>	<b>LCS</b>							
Total Dissolved Solids			102.2		%		85-115	29-OCT-19
<b>WG3204372-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-OCT-19
<b>TKN-L-F-CL</b>								
Batch	R4884311							
<b>WG3201558-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.3		%		75-125	25-OCT-19
<b>WG3201558-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	25-OCT-19
<b>TSS-L-CL</b>								
Batch	R4889096							
<b>WG3203434-10</b>	<b>LCS</b>							
Total Suspended Solids			95.5		%		85-115	28-OCT-19
<b>WG3203434-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-OCT-19
<b>TURBIDITY-CL</b>								
Batch	R4883631							
<b>WG3200828-5</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	24-OCT-19
<b>WG3200828-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-OCT-19

# Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2371345

Report Date: 01-NOV-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	23-OCT-19 11:20	24-OCT-19 17:45	0.25	30	hours	EHTR-FM
	2	23-OCT-19 12:47	24-OCT-19 17:45	0.25	29	hours	EHTR-FM
	3	23-OCT-19 12:00	24-OCT-19 17:45	0.25	30	hours	EHTR-FM
	4	23-OCT-19 11:20	24-OCT-19 17:45	0.25	30	hours	EHTR-FM
	5	23-OCT-19 12:00	24-OCT-19 17:45	0.25	30	hours	EHTR-FM
	6	23-OCT-19 12:47	24-OCT-19 17:45	0.25	29	hours	EHTR-FM
pH							
	1	23-OCT-19 11:20	25-OCT-19 09:00	0.25	46	hours	EHTR-FM
	2	23-OCT-19 12:47	25-OCT-19 09:00	0.25	44	hours	EHTR-FM
	3	23-OCT-19 12:00	25-OCT-19 09:00	0.25	45	hours	EHTR-FM
	4	23-OCT-19 11:20	25-OCT-19 09:00	0.25	46	hours	EHTR-FM
	5	23-OCT-19 12:00	25-OCT-19 09:00	0.25	45	hours	EHTR-FM
	6	23-OCT-19 12:47	25-OCT-19 09:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2371345 were received on 24-OCT-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 20191023-1350

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudnyla Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudnyla.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@oquisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: By: Field, L3 Lab, FLD Field & Lab, N3 Non



L2371345-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
1 FR_DC1_QTR_2019-10-07_N	FR_DC1	WG		2019/10/23	11:20	G	5
2 FR_DC2_QTR_2019-10-07_N	FR_DC2	WG		2019/10/23	12:47	G	5
3 FR_FLD_QTR_2019-10-07_N	FR_FLD	WG		2019/10/23	12:00	G	5
4 FR_HMWID_QTR_2019-10-07_N	FR_HMWID	WG		2019/10/23	11:20	G	5
5 FR_HMWIS_QTR_2019-10-07_N	FR_HMWIS	WG		2019/10/23	12:00	G	5
6 FR_HMW3_QTR_2019-10-07_N	FR_HMW3	WG		2019/10/23	12:47	G	5

ANALYSIS	F	F	F	N	N				
ALS_Package-DOC	NONE	NONE	HNO3	NONE	H2SO4				
HG-D-CVAF-VA									
TECKCOAL-MET-D-VA									
TECKCOAL-ROUTINE-VA									
ALS_Package-TKN/TOC									

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b> Britt Anderson	<b>DATE/TIME</b> October 23 2019	<b>ACCEPTED BY/AFFILIATION</b> DK	<b>DATE/TIME</b> 10/24 09:00
---	--	-------------------------------------	--------------------------------------	------------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Britt Anderson		Mobile #	4039907060
Sampler's Signature			Date/Time	October 23 2019

7<sup>o</sup> C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Scott Roughead  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 25-OCT-19  
Report Date: 01-NOV-19 15:04 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2372101  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191024-1426  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2372101-1	L2372101-2	L2372101-3	L2372101-4	L2372101-5
					WG	WG	WG	WG	WG
		24-OCT-19	12:50	FR_09-02-A_QTR_2019-10-07_N	24-OCT-19	24-OCT-19	24-OCT-19	24-OCT-19	24-OCT-19
					13:15	13:15	09:50	09:35	12:50
					FR_09-02-A_QTR_2019-10-07_N	FR_09-02-B_QTR_2019-10-07_N	FR_09-04-A_QTR_2019-10-07_N	FR_09-04-B_QTR_2019-10-07_N	FR_DC3_QTR_2019-10-07_N
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	780	714	1150	1160	762			
	Hardness (as CaCO3) (mg/L)	458	424	774	779	463			
	pH (pH)	8.01	7.93	7.63	7.69	8.08			
	ORP (mV)	471	468	382	397	344			
	Total Suspended Solids (mg/L)	4.7	2.0	3.1	10.5	20.9			
	Total Dissolved Solids (mg/L)	594 <sup>DLHC</sup>	512 <sup>DLHC</sup>	952 <sup>DLHC</sup>	950 <sup>DLHC</sup>	607 <sup>DLHC</sup>			
	Turbidity (NTU)	2.58	0.16	0.55	12.0	17.8			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.0	3.7	9.2	11.4	2.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	186	210	368	370	186			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	186	210	368	370	186			
	Ammonia as N (mg/L)	0.0092	<0.0050	<0.0050	0.0051	<0.0050			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050			
	Chloride (Cl) (mg/L)	1.15	1.35	6.1 <sup>DLHC</sup>	7.1 <sup>DLHC</sup>	1.59			
	Fluoride (F) (mg/L)	0.146	0.181	0.19 <sup>DLHC</sup>	0.21 <sup>DLHC</sup>	0.153			
	Ion Balance (%)	103	99.9	103 <sup>DLHC</sup>	102 <sup>DLHC</sup>	104			
	Nitrate (as N) (mg/L)	10.4	9.24	1.31 <sup>DLHC</sup>	1.50 <sup>DLHC</sup>	10.3			
	Nitrite (as N) (mg/L)	<0.0010 <sup>DLM</sup>	<0.0010 <sup>TKNI</sup>	<0.0050	<0.0050	<0.0010 <sup>TKNI</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<2.5	<0.050	0.289 <sup>RRV</sup>	0.294	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0032	0.0027	0.0037 <sup>RRV</sup>	0.0048	0.0034			
	Phosphorus (P)-Total (mg/L)	0.0069	0.0026	0.0027 <sup>DLHC</sup>	0.0078 <sup>DLHC</sup>	0.0412			
	Sulfate (SO4) (mg/L)	219	180	377	385	218			
	Anion Sum (meq/L)	9.06	8.63	15.5	15.7	9.05			
	Cation Sum (meq/L)	9.31	8.62	16.0	16.1	9.39			
	Cation - Anion Balance (%)	1.4	-0.1	1.5	1.2	1.8			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.84	1.01	0.95	0.82		
Total Organic Carbon (mg/L)		1.05	0.87	1.14	1.18	1.87			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00024	0.00014	0.00012	0.00011	0.00023			
	Arsenic (As)-Dissolved (mg/L)	0.00015	<0.00010	<0.00010	<0.00010	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.119	0.120	0.0965	0.0940	0.119			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2372101-6 WG 24-OCT-19 12:05 FR_MW- SK1A_QTR_2019- 10-07_N	L2372101-7 WG 24-OCT-19 11:20 FR_MW- SK1B_20191024		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1320	824		
	Hardness (as CaCO3) (mg/L)	875	520		
	pH (pH)	7.68	7.82		
	ORP (mV)	530	380		
	Total Suspended Solids (mg/L)	2.4	7.1		
	Total Dissolved Solids (mg/L)	1100 <sup>DLHC</sup>	604 <sup>DLHC</sup>		
	Turbidity (NTU)	0.12	2.70		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	11.2	6.1		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	366	265		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	366	265		
	Ammonia as N (mg/L)	<0.0050	0.0088		
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	5.0 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)	0.11 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>		
	Ion Balance (%)	103	103		
	Nitrate (as N) (mg/L)	41.3 <sup>DLHC</sup>	3.23 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	0.073 <sup>TKNI</sup>		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0036	0.0013		
	Phosphorus (P)-Total (mg/L)	0.0032	0.0047		
	Sulfate (SO4) (mg/L)	330 <sup>DLHC</sup>	222 <sup>DLHC</sup>		
	Anion Sum (meq/L)	17.1	10.3		
	Cation Sum (meq/L)	17.7	10.6		
	Cation - Anion Balance (%)	1.7	1.6		
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.64	
Total Organic Carbon (mg/L)		0.90	0.80		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00015	0.00024		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00016		
	Barium (Ba)-Dissolved (mg/L)	0.0724	0.0460		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2372101-1	L2372101-2	L2372101-3	L2372101-4	L2372101-5
					WG	WG	WG	WG	WG
		24-OCT-19	12:50	FR_09-02-A_QTR_2019-10-07_N	24-OCT-19	13:15	24-OCT-19	09:50	24-OCT-19
					FR_09-02-A_QTR_2019-10-07_N	FR_09-02-B_QTR_2019-10-07_N	FR_09-04-A_QTR_2019-10-07_N	FR_09-04-B_QTR_2019-10-07_N	FR_DC3_QTR_2019-10-07_N
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.016	0.014	0.031	0.032	0.013			
	Cadmium (Cd)-Dissolved (ug/L)	0.0326	0.0207	1.12	1.04	0.0272			
	Calcium (Ca)-Dissolved (mg/L)	105	96.7	157	159	106			
	Chromium (Cr)-Dissolved (mg/L)	0.00012	0.00012	<0.00010	<0.00010	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.12	1.48	1.39	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00175	<0.00020	0.00031	0.00033	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.013	<0.010	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000065	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0288	0.0373	0.0904	0.0908	0.0289			
	Magnesium (Mg)-Dissolved (mg/L)	47.8	44.2	92.8	92.9	48.3			
	Manganese (Mn)-Dissolved (mg/L)	0.00025	<0.00010	1.56	1.57	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00170	0.00148	0.00202	0.00187	0.00164			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00827	0.00811	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.25	1.94	5.43	5.41	2.26			
	Selenium (Se)-Dissolved (ug/L)	49.3	36.3	0.395	0.557	52.4			
	Silicon (Si)-Dissolved (mg/L)	1.98	1.93	2.59	2.63	1.94			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.26	2.48	7.21	8.00	1.80			
	Strontium (Sr)-Dissolved (mg/L)	0.147	0.152	0.243	0.242	0.151			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000054	0.000057	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00279	0.00271	0.00648	0.00617	0.00272			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0042	0.0022	0.0043	0.0045	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2372101-6 WG 24-OCT-19 12:05 FR_MW- SK1A_QTR_2019- 10-07_N	L2372101-7 WG 24-OCT-19 11:20 FR_MW- SK1B_20191024		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.018	0.014		
	Cadmium (Cd)-Dissolved (ug/L)	0.0336	0.0210		
	Calcium (Ca)-Dissolved (mg/L)	201	135		
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.15	0.46		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.025		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0468	0.0105		
	Magnesium (Mg)-Dissolved (mg/L)	90.8	44.3		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.354		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000525	0.000460		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00162		
	Potassium (K)-Dissolved (mg/L)	2.60	1.08		
	Selenium (Se)-Dissolved (ug/L)	171	4.48		
	Silicon (Si)-Dissolved (mg/L)	3.06	3.48		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	4.08	4.75		
	Strontium (Sr)-Dissolved (mg/L)	0.201	0.244		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000014		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00510	0.00314		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2372101-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			



## Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191024-1426

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4888823							
<b>WG3204341-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	28-OCT-19
<b>WG3204341-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	28-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4888821							
<b>WG3204348-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	28-OCT-19
<b>WG3204348-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4889405							
<b>WG3203281-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.9		%		80-120	28-OCT-19
<b>WG3203281-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4885907							
<b>WG3202544-6</b>	<b>LCS</b>							
Bromide (Br)			94.4		%		85-115	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4890197							
<b>WG3205949-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			107.4		%		80-120	29-OCT-19
<b>WG3205949-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.0		%		80-120	29-OCT-19
<b>WG3205949-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-OCT-19
<b>WG3205949-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4890197							
<b>WG3205949-10</b>	<b>LCS</b>							
Total Organic Carbon			112.7		%		80-120	29-OCT-19
<b>WG3205949-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4890197</b>							
<b>WG3205949-6</b>	<b>LCS</b>							
Total Organic Carbon			99.9		%		80-120	30-OCT-19
<b>WG3205949-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-OCT-19
<b>WG3205949-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-OCT-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4885907</b>							
<b>WG3202544-6</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4888821</b>							
<b>WG3204348-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.5		%		90-110	28-OCT-19
<b>WG3204348-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-OCT-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4885907</b>							
<b>WG3202544-6</b>	<b>LCS</b>							
Fluoride (F)			102.9		%		90-110	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	25-OCT-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4889616</b>							
<b>WG3205031-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.4		%		80-120	30-OCT-19
<b>WG3205031-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.8		%		80-120	30-OCT-19
<b>WG3205031-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-19
<b>WG3205031-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-OCT-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4889405</b>							
<b>WG3203281-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.1		%		80-120	28-OCT-19
Antimony (Sb)-Dissolved			103.0		%		80-120	28-OCT-19
Arsenic (As)-Dissolved			101.7		%		80-120	28-OCT-19
Barium (Ba)-Dissolved			98.4		%		80-120	28-OCT-19
Bismuth (Bi)-Dissolved			100.6		%		80-120	28-OCT-19
Boron (B)-Dissolved			103.7		%		80-120	28-OCT-19
Cadmium (Cd)-Dissolved			98.1		%		80-120	28-OCT-19
Calcium (Ca)-Dissolved			108.0		%		80-120	28-OCT-19
Chromium (Cr)-Dissolved			98.9		%		80-120	28-OCT-19
Cobalt (Co)-Dissolved			97.4		%		80-120	28-OCT-19
Copper (Cu)-Dissolved			97.6		%		80-120	28-OCT-19
Iron (Fe)-Dissolved			94.3		%		80-120	28-OCT-19
Lead (Pb)-Dissolved			100.7		%		80-120	28-OCT-19
Lithium (Li)-Dissolved			101.5		%		80-120	28-OCT-19
Magnesium (Mg)-Dissolved			99.8		%		80-120	28-OCT-19
Manganese (Mn)-Dissolved			99.6		%		80-120	28-OCT-19
Molybdenum (Mo)-Dissolved			107.8		%		80-120	28-OCT-19
Nickel (Ni)-Dissolved			97.0		%		80-120	28-OCT-19
Potassium (K)-Dissolved			99.9		%		80-120	28-OCT-19
Selenium (Se)-Dissolved			93.3		%		80-120	28-OCT-19
Silicon (Si)-Dissolved			96.7		%		60-140	28-OCT-19
Silver (Ag)-Dissolved			105.3		%		80-120	28-OCT-19
Sodium (Na)-Dissolved			103.6		%		80-120	28-OCT-19
Strontium (Sr)-Dissolved			106.0		%		80-120	28-OCT-19
Thallium (Tl)-Dissolved			99.8		%		80-120	28-OCT-19
Tin (Sn)-Dissolved			98.8		%		80-120	28-OCT-19
Titanium (Ti)-Dissolved			100.6		%		80-120	28-OCT-19
Uranium (U)-Dissolved			101.6		%		80-120	28-OCT-19
Vanadium (V)-Dissolved			99.1		%		80-120	28-OCT-19
Zinc (Zn)-Dissolved			100.1		%		80-120	28-OCT-19
<b>WG3203281-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4889405</b>							
<b>WG3203281-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-OCT-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4892248</b>							
<b>WG3206395-26</b>	<b>LCS</b>							
Ammonia as N			105.2		%		85-115	30-OCT-19
<b>WG3206395-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-OCT-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4885907							
<b>WG3202544-6</b>	<b>LCS</b>							
Nitrite (as N)			98.3		%		90-110	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-OCT-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4885907							
<b>WG3202544-6</b>	<b>LCS</b>							
Nitrate (as N)			102.8		%		90-110	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4885349							
<b>WG3201276-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	25-OCT-19
<b>WG3201276-4</b>	<b>DUP</b>	<b>L2372101-1</b>						
ORP		471	480	J	mV	9.3	15	25-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4888019							
<b>WG3203322-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.4		%		80-120	28-OCT-19
<b>WG3203322-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4888821							
<b>WG3204348-2</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	28-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4887943							
<b>WG3201931-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.0		%		80-120	25-OCT-19
<b>WG3201931-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4885907							
<b>WG3202544-6</b>	<b>LCS</b>							
Sulfate (SO4)			104.0		%		90-110	25-OCT-19
<b>WG3202544-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-OCT-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4891656							
<b>WG3205561-5</b>	<b>LCS</b>							
Total Dissolved Solids			104.8		%		85-115	30-OCT-19
<b>WG3205561-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-OCT-19
<b>TKN-L-F-CL</b>								
Batch	R4885926							
<b>WG3202302-30</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	26-OCT-19
<b>WG3202302-34</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	26-OCT-19
<b>WG3202302-29</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-OCT-19
<b>WG3202302-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-OCT-19
<b>TSS-L-CL</b>								
Batch	R4892226							
<b>WG3205778-4</b>	<b>LCS</b>							
Total Suspended Solids			94.2		%		85-115	30-OCT-19
<b>WG3205778-6</b>	<b>LCS</b>							
Total Suspended Solids			98.0		%		85-115	30-OCT-19
<b>WG3205778-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	30-OCT-19
<b>WG3205778-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	30-OCT-19
<b>TURBIDITY-CL</b>								
Batch	R4885652							
<b>WG3201262-6</b>	<b>DUP</b>	<b>L2372101-4</b>						
Turbidity		12.0	12.3		NTU	2.5	15	25-OCT-19
<b>WG3201262-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	25-OCT-19
<b>WG3201262-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4885652							
WG3201262-4	MB							
Turbidity			<0.10		NTU		0.1	25-OCT-19



# Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2372101

Report Date: 01-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	24-OCT-19 12:50	25-OCT-19 17:30	0.25	29	hours	EHTR-FM
	2	24-OCT-19 13:15	25-OCT-19 17:30	0.25	28	hours	EHTR-FM
	3	24-OCT-19 09:50	25-OCT-19 17:30	0.25	32	hours	EHTR-FM
	4	24-OCT-19 09:35	25-OCT-19 17:30	0.25	32	hours	EHTR-FM
	5	24-OCT-19 12:50	25-OCT-19 17:30	0.25	29	hours	EHTR-FM
	6	24-OCT-19 12:05	25-OCT-19 17:30	0.25	30	hours	EHTR-FM
	7	24-OCT-19 11:20	25-OCT-19 17:30	0.25	30	hours	EHTR-FM
pH							
	1	24-OCT-19 12:50	28-OCT-19 10:00	0.25	93	hours	EHTR-FM
	2	24-OCT-19 13:15	28-OCT-19 10:00	0.25	93	hours	EHTR-FM
	3	24-OCT-19 09:50	28-OCT-19 10:00	0.25	96	hours	EHTR-FM
	4	24-OCT-19 09:35	28-OCT-19 10:00	0.25	96	hours	EHTR-FM
	5	24-OCT-19 12:50	28-OCT-19 10:00	0.25	93	hours	EHTR-FM
	6	24-OCT-19 12:05	28-OCT-19 10:00	0.25	94	hours	EHTR-FM
	7	24-OCT-19 11:20	28-OCT-19 10:00	0.25	95	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2372101 were received on 25-OCT-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.


Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191024-1426

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Scott Roughead			Lab Contact	Lyudmyla Shvets		Email 1:	david.barroutga@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE		Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equilonline.com		X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	1-250-433-6976			Phone Number	403 407 1794		PO number				

SAMPLE DETAILS							
 L2372101-COFC							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
FR_09-02-A_QTR_2019-10-07_N	FR_09-02-A	WG		2019/10/24	12:50	G	5
FR_09-02-B_QTR_2019-10-07_N	FR_09-02-B	WG		2019/10/24	13:15	G	5
FR_09-04-A_QTR_2019-10-07_N	FR_09-04-A	WG		2019/10/24	09:50	G	5
FR_09-04-B_QTR_2019-10-07_N	FR_09-04-B	WG		2019/10/24	09:35	G	5
FR_DC3_QTR_2019-10-07_N	FR_DC3	WG		2019/10/24	12:50	G	5
FR_MW-SK1A_QTR_2019-10-07_N	FR_MW-SK1A	WG		2019/10/24	12:05	G	5
FR_MW-SK1B_20191024	FR_MW-SK1B	WG		2019/10/24	11:20	G	5

ANALYSIS REQUESTED				
ALS	TECK	TECK	TECK	ALS
Package-DOC	D-CVAF-VA	COAL-MET-D-VA	COAL-ROUTINE-VA	Package-TKN/TOC
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	October 24 2019		

SERVICE REQUEST (rush subject to availability)		Sampler's Name	Mobile #
Regular (default)	<input checked="" type="checkbox"/>	Britt Anderson	4039907060
Priority (2-3 business days) - 50% surcharge	<input type="checkbox"/>		
Emergency (1 Business Day) - 100% surcharge	<input type="checkbox"/>		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<input type="checkbox"/>		

*[Handwritten Signature]*

*[Handwritten Signature]* 10/25/19 8:30

6



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Scott Roughead  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 02-NOV-19  
Report Date: 12-NOV-19 15:34 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2376287  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191101-1409  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2376287-1 WG 01-NOV-19 10:15 FR_09-01- A_QTR_2019-10- 07_N	L2376287-2 WG 01-NOV-19 10:05 FR_09-01- B_QTR_2019-10- 07_N	L2376287-3 WG 01-NOV-19 10:50 FR_GH_WELL4_Q TR_2019-10-07_N	L2376287-4 WG 01-NOV-19 12:40 FR_TT43_QTR_20 19-10-07_N
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1210	1190	907	1960
	Hardness (as CaCO3) (mg/L)	861	711	697	1080
	pH (pH)	8.28	7.92	8.25	7.80
	ORP (mV)	464	488	372	310
	Total Suspended Solids (mg/L)	1.1	2.1	<1.0	2.2
	Total Dissolved Solids (mg/L)	1090 <sup>DLHC</sup>	889 <sup>DLHC</sup>	837 <sup>DLHC</sup>	1330 <sup>DLHC</sup>
	Turbidity (NTU)	<0.10	0.84	0.17	0.42
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	8.3	<1.0	17.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	354	303	207	397
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	354	303	207	397
	Ammonia as N (mg/L)	0.0235	<0.0050	0.0262	<0.0050
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	3.12	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.14 <sup>DLHC</sup>	0.214	0.13 <sup>DLHC</sup>	0.21 <sup>DLHC</sup>
	Ion Balance (%)	99.3 <sup>DLHC</sup>	102	115 <sup>DLHC</sup>	104 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)	38.7 <sup>DLHC</sup>	20.4	31.9 <sup>DLHC</sup>	55.3 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	0.0011	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0028	0.0069 <sup>RRV</sup>	<0.0010	0.0020
	Phosphorus (P)-Total (mg/L)	0.0027	0.0040 <sup>RRV</sup>	<0.0020 <sup>DLHC</sup>	<0.0020 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	371 <sup>DLHC</sup>	317	278 <sup>DLHC</sup>	433 <sup>DLHC</sup>
	Anion Sum (meq/L)	17.6	14.2	12.2	20.9
	Cation Sum (meq/L)	17.4	14.5	14.1	21.8
	Cation - Anion Balance (%)	-0.4	0.9	7.1	2.1
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50
Total Organic Carbon (mg/L)		<0.50	2.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00028	0.00016	<0.00010	0.00047
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0911	0.119	0.0811	0.0722
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2376287-1	L2376287-2	L2376287-3	L2376287-4
		Description	WG	WG	WG	WG
		Sampled Date	01-NOV-19	01-NOV-19	01-NOV-19	01-NOV-19
		Sampled Time	10:15	10:05	10:50	12:40
		Client ID	FR_09-01-A_QTR_2019-10-07_N	FR_09-01-B_QTR_2019-10-07_N	FR_GH_WELL4_QTR_2019-10-07_N	FR_TT43_QTR_2019-10-07_N
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.020	0.016	0.011	0.026
	Cadmium (Cd)-Dissolved (ug/L)		0.0377	0.0327	0.0463	0.0512
	Calcium (Ca)-Dissolved (mg/L)		197	164	170	246
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00018
	Cobalt (Co)-Dissolved (ug/L)		0.23	0.49	0.22	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	0.00170	0.00057
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	0.015	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0646	0.0541	0.0300	0.0716
	Magnesium (Mg)-Dissolved (mg/L)		89.8	73.0	66.4	113
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	<0.00010	0.00092	0.00027
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000781	0.00137	0.000336	0.00162
	Nickel (Ni)-Dissolved (mg/L)		0.00059	0.00080	<0.00050	0.00094
	Potassium (K)-Dissolved (mg/L)		3.29	3.19	1.49	4.33
	Selenium (Se)-Dissolved (ug/L)		126	70.7	103	184
	Silicon (Si)-Dissolved (mg/L)		2.33	2.14	2.67	2.05
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.42	3.94	3.00	3.36
	Strontium (Sr)-Dissolved (mg/L)		0.240	0.218	0.226	0.251
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00528	0.00564	0.00362	0.00903
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0016	0.0640	0.0208

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2376287-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2376287-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:



## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191101-1409

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4898668							
<b>WG3210664-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	04-NOV-19
<b>WG3210664-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	04-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4898708							
<b>WG3210675-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	04-NOV-19
<b>WG3210675-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4901098							
<b>WG3211507-3</b>	<b>DUP</b>	<b>L2376287-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	06-NOV-19
<b>WG3211507-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.0		%		80-120	06-NOV-19
<b>WG3211507-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-NOV-19
<b>WG3211507-4</b>	<b>MS</b>	<b>L2376287-2</b>						
Beryllium (Be)-Dissolved			95.7		%		70-130	06-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4897309							
<b>WG3209898-2</b>	<b>LCS</b>							
Bromide (Br)			100.1		%		85-115	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	03-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4900392							
<b>WG3212021-3</b>	<b>DUP</b>	<b>L2376287-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3212021-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.7		%		80-120	05-NOV-19
<b>WG3212021-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>WG3212021-4</b>	<b>MS</b>	<b>L2376287-1</b>						
Dissolved Organic Carbon			89.4		%		70-130	05-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4900392</b>							
<b>WG3212021-3</b>	<b>DUP</b>	<b>L2376287-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3212021-2</b>	<b>LCS</b>							
Total Organic Carbon			106.8		%		80-120	05-NOV-19
<b>WG3212021-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>WG3212021-4</b>	<b>MS</b>	<b>L2376287-1</b>						
Total Organic Carbon			93.5		%		70-130	05-NOV-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4897309</b>							
<b>WG3209898-2</b>	<b>LCS</b>							
Chloride (Cl)			100.6		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	03-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4898708</b>							
<b>WG3210675-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			93.9		%		90-110	04-NOV-19
<b>WG3210675-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4897309</b>							
<b>WG3209898-2</b>	<b>LCS</b>							
Fluoride (F)			104.4		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	03-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4901447</b>							
<b>WG3211964-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.4		%		80-120	07-NOV-19
<b>WG3211964-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-3</b>	<b>DUP</b>	<b>L2376287-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	06-NOV-19
Antimony (Sb)-Dissolved		0.00028	0.00028		mg/L	0.2	20	06-NOV-19



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-3</b>	<b>DUP</b>	<b>L2376287-1</b>						
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-NOV-19
Barium (Ba)-Dissolved		0.0911	0.0913		mg/L	0.2	20	06-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-NOV-19
Boron (B)-Dissolved		0.020	0.019		mg/L	1.0	20	06-NOV-19
Cadmium (Cd)-Dissolved		0.0000377	0.0000392		mg/L	3.9	20	06-NOV-19
Calcium (Ca)-Dissolved		197	194		mg/L	1.4	20	06-NOV-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-NOV-19
Cobalt (Co)-Dissolved		0.00023	0.00024		mg/L	2.6	20	06-NOV-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	06-NOV-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-NOV-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	06-NOV-19
Lithium (Li)-Dissolved		0.0646	0.0634		mg/L	1.8	20	06-NOV-19
Magnesium (Mg)-Dissolved		89.8	88.7		mg/L	1.2	20	06-NOV-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-NOV-19
Molybdenum (Mo)-Dissolved		0.000781	0.000749		mg/L	4.2	20	06-NOV-19
Nickel (Ni)-Dissolved		0.00059	0.00052		mg/L	13	20	06-NOV-19
Potassium (K)-Dissolved		3.29	3.24		mg/L	1.4	20	06-NOV-19
Selenium (Se)-Dissolved		0.126	0.128		mg/L	1.5	20	06-NOV-19
Silicon (Si)-Dissolved		2.33	2.29		mg/L	1.4	20	06-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-NOV-19
Sodium (Na)-Dissolved		3.42	3.45		mg/L	0.8	20	06-NOV-19
Strontium (Sr)-Dissolved		0.240	0.242		mg/L	0.9	20	06-NOV-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	06-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	06-NOV-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	06-NOV-19
Uranium (U)-Dissolved		0.00528	0.00513		mg/L	2.8	20	06-NOV-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	06-NOV-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-NOV-19
<b>WG3211507-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.4		%		80-120	06-NOV-19
Antimony (Sb)-Dissolved			95.9		%		80-120	06-NOV-19
Arsenic (As)-Dissolved			101.2		%		80-120	06-NOV-19
Barium (Ba)-Dissolved			101.3		%		80-120	06-NOV-19
Bismuth (Bi)-Dissolved			110.1		%		80-120	06-NOV-19



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			92.6		%		80-120	06-NOV-19
Cadmium (Cd)-Dissolved			100.5		%		80-120	06-NOV-19
Calcium (Ca)-Dissolved			97.2		%		80-120	06-NOV-19
Chromium (Cr)-Dissolved			103.3		%		80-120	06-NOV-19
Cobalt (Co)-Dissolved			101.6		%		80-120	06-NOV-19
Copper (Cu)-Dissolved			102.7		%		80-120	06-NOV-19
Iron (Fe)-Dissolved			100.8		%		80-120	06-NOV-19
Lead (Pb)-Dissolved			96.8		%		80-120	06-NOV-19
Lithium (Li)-Dissolved			96.5		%		80-120	06-NOV-19
Magnesium (Mg)-Dissolved			100.6		%		80-120	06-NOV-19
Manganese (Mn)-Dissolved			100.9		%		80-120	06-NOV-19
Molybdenum (Mo)-Dissolved			103.8		%		80-120	06-NOV-19
Nickel (Ni)-Dissolved			103.9		%		80-120	06-NOV-19
Potassium (K)-Dissolved			106.1		%		80-120	06-NOV-19
Selenium (Se)-Dissolved			105.0		%		80-120	06-NOV-19
Silicon (Si)-Dissolved			101.2		%		60-140	06-NOV-19
Silver (Ag)-Dissolved			98.0		%		80-120	06-NOV-19
Sodium (Na)-Dissolved			105.9		%		80-120	06-NOV-19
Strontium (Sr)-Dissolved			102.1		%		80-120	06-NOV-19
Thallium (Tl)-Dissolved			98.1		%		80-120	06-NOV-19
Tin (Sn)-Dissolved			97.6		%		80-120	06-NOV-19
Titanium (Ti)-Dissolved			101.0		%		80-120	06-NOV-19
Uranium (U)-Dissolved			95.2		%		80-120	06-NOV-19
Vanadium (V)-Dissolved			106.0		%		80-120	06-NOV-19
Zinc (Zn)-Dissolved			113.1		%		80-120	06-NOV-19
<b>WG3211507-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-NOV-19



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-1</b>	<b>MB</b>	<b>NP</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
<b>WG3211507-4</b>	<b>MS</b>	<b>L2376287-2</b>						
Aluminum (Al)-Dissolved			95.5		%		70-130	06-NOV-19
Antimony (Sb)-Dissolved			102.7		%		70-130	06-NOV-19
Arsenic (As)-Dissolved			100.5		%		70-130	06-NOV-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Bismuth (Bi)-Dissolved			86.1		%		70-130	06-NOV-19
Boron (B)-Dissolved			94.1		%		70-130	06-NOV-19
Cadmium (Cd)-Dissolved			99.5		%		70-130	06-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Chromium (Cr)-Dissolved			98.7		%		70-130	06-NOV-19
Cobalt (Co)-Dissolved			97.7		%		70-130	06-NOV-19
Copper (Cu)-Dissolved			94.8		%		70-130	06-NOV-19



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-4</b>	<b>MS</b>	<b>L2376287-2</b>						
Iron (Fe)-Dissolved			99.2		%		70-130	06-NOV-19
Lead (Pb)-Dissolved			92.3		%		70-130	06-NOV-19
Lithium (Li)-Dissolved			102.7		%		70-130	06-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Manganese (Mn)-Dissolved			94.4		%		70-130	06-NOV-19
Molybdenum (Mo)-Dissolved			109.4		%		70-130	06-NOV-19
Nickel (Ni)-Dissolved			98.0		%		70-130	06-NOV-19
Potassium (K)-Dissolved			103.8		%		70-130	06-NOV-19
Selenium (Se)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Silicon (Si)-Dissolved			91.4		%		70-130	06-NOV-19
Silver (Ag)-Dissolved			104.3		%		70-130	06-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Thallium (Tl)-Dissolved			93.4		%		70-130	06-NOV-19
Tin (Sn)-Dissolved			100.5		%		70-130	06-NOV-19
Titanium (Ti)-Dissolved			95.7		%		70-130	06-NOV-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	06-NOV-19
Vanadium (V)-Dissolved			101.4		%		70-130	06-NOV-19
Zinc (Zn)-Dissolved			96.6		%		70-130	06-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902578</b>							
<b>WG3212385-18</b>	<b>LCS</b>							
Ammonia as N			109.2		%		85-115	06-NOV-19
<b>WG3212385-26</b>	<b>LCS</b>							
Ammonia as N			109.9		%		85-115	06-NOV-19
<b>WG3212385-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-NOV-19
<b>WG3212385-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897309</b>							
<b>WG3209898-2</b>	<b>LCS</b>							
Nitrite (as N)			102.2		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	03-NOV-19



## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4897309							
<b>WG3209898-2</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	03-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4896585							
<b>WG3209245-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	03-NOV-19
<b>WG3209245-4</b>	<b>DUP</b>	<b>L2376287-4</b>						
ORP		310	309	J	mV	1.3	15	03-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4898897							
<b>WG3211001-11</b>	<b>DUP</b>	<b>L2376287-4</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3211001-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.0		%		80-120	05-NOV-19
<b>WG3211001-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-NOV-19
<b>WG3211001-12</b>	<b>MS</b>	<b>L2376287-4</b>						
Phosphorus (P)-Total			89.0		%		70-130	05-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4898708							
<b>WG3210675-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	04-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4896841							
<b>WG3209030-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.8		%		80-120	02-NOV-19
<b>WG3209030-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4897309							
<b>WG3209898-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.6		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	03-NOV-19





## Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4900577							
<b>WG3210718-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.9		%		85-115	05-NOV-19
<b>WG3210718-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	05-NOV-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4897727							
<b>WG3209863-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.6		%		75-125	04-NOV-19
<b>WG3209863-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-NOV-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4900626							
<b>WG3211289-4</b>	<b>LCS</b>							
Total Suspended Solids			98.4		%		85-115	05-NOV-19
<b>WG3211289-6</b>	<b>LCS</b>							
Total Suspended Solids			94.6		%		85-115	05-NOV-19
<b>WG3211289-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-NOV-19
<b>WG3211289-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-NOV-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4896593							
<b>WG3209244-11</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	03-NOV-19
<b>WG3209244-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	03-NOV-19

# Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2376287

Report Date: 12-NOV-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	01-NOV-19 10:15	03-NOV-19 09:00	0.25	47	hours	EHTR-FM
	2	01-NOV-19 10:05	03-NOV-19 09:00	0.25	47	hours	EHTR-FM
	3	01-NOV-19 10:50	03-NOV-19 09:00	0.25	46	hours	EHTR-FM
	4	01-NOV-19 12:40	03-NOV-19 09:00	0.25	44	hours	EHTR-FM
pH							
	1	01-NOV-19 10:15	04-NOV-19 10:00	0.25	72	hours	EHTR-FM
	2	01-NOV-19 10:05	04-NOV-19 10:00	0.25	72	hours	EHTR-FM
	3	01-NOV-19 10:50	04-NOV-19 10:00	0.25	71	hours	EHTR-FM
	4	01-NOV-19 12:40	04-NOV-19 10:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2376287 were received on 02-NOV-19 14:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191101-1409

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Project Manager	Scott Roughhead			Lab Contact	Lyudmyla Shvets		Email 1:	david.burroughs@teck.com	X	X	X	
Email	scott.roughhead@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	britt.anderson@teck.com	X	X	X	
Address				Address	2359 29 Street NE		Email 3:	scott.roughhead@teck.com	X	X	X	
							Email 4:	teckcoal@outlook.com			X	
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	Jared.Coyenne@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:				
Phone Number	1-250-433-6976			Phone Number	403 407 1794		PO number					

SAMPLE DETAILS

ANALYSIS REQUESTED

F: Field, L: Lab, H: Field & Lab, N: None



L2376287-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
FR_09-01-A_QTR_2019-10-07_N	FR_09-01-A	WG		2019/11/01	10:15	G	5	1	1	1	1	1						
FR_09-01-B_QTR_2019-10-07_N	FR_09-01-B	WG		2019/11/01	10:05	G	5	1	1	1	1	1						
FR_GH_WELL4_QTR_2019-10-07_N	FR_GH_WELL4	WG		2019/11/01	10:50	G	5	1	1	1	1	1						
FR_TT43_QTR_2019-10-07_N	FR_TT43	WG		2019/11/01	12:40	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

	Britt Anderson	November 1 2019	<i>Blip</i>	2 Nov 19 14:00
				6°

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Sampler's Name	Britt Anderson	Mobile #	4039907060
Priority (2-3 business days) - 50% surcharge	Sampler's Signature	<i>[Signature]</i>	Date/Time	November 1 2019
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Scott Roughead  
PO BOX 100  
ELKFORD BC V0B 1H0

Date Received: 08-NOV-19  
Report Date: 18-NOV-19 12:20 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2379531  
Project P.O. #: VPO00610782  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191107-1416  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2379531-1	L2379531-2	L2379531-3		
					L2379531-1 WG 07-NOV-19 11:45 FR_GCMW- 2_QTR_2019-10- 07_N	L2379531-2 WG 07-NOV-19 10:00 FR_MW- 1B_QTR_2019-10- 07_N	L2379531-3 WG 07-NOV-19 11:00 FR_POTWELLS_Q TR_2019-10-07_N		
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1120	645	407					
	Hardness (as CaCO3) (mg/L)	799	397	283					
	pH (pH)	7.93	8.24	8.24					
	ORP (mV)	387	400	386					
	Total Suspended Solids (mg/L)	2.8	2.5	<1.0					
	Total Dissolved Solids (mg/L)	1050 <sup>DLHC</sup>	516 <sup>DLHC</sup>	331 <sup>DLHC</sup>					
	Turbidity (NTU)	0.72	2.38	0.21					
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.9	<1.0	<1.0					
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	243	175	147					
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0					
	Alkalinity, Total (as CaCO3) (mg/L)	243	175	147					
	Ammonia as N (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050	<0.0050					
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.050	<0.050					
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	0.56	<0.50					
	Fluoride (F) (mg/L)	0.18 <sup>DLHC</sup>	0.131	0.206					
	Ion Balance (%)	99.0	97.4	102					
	Nitrate (as N) (mg/L)	42.7 <sup>DLHC</sup>	12.8	2.77					
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0010 <sup>TKNI</sup>	<0.0010 <sup>TKNI</sup>					
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	0.058 <sup>TKNI</sup>					
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027	0.0048	0.0023					
	Phosphorus (P)-Total (mg/L)	0.0027	0.0049	<0.0020					
	Sulfate (SO4) (mg/L)	408 <sup>DLHC</sup>	182	118					
	Anion Sum (meq/L)	16.4	8.22	5.61					
	Cation Sum (meq/L)	16.2	8.01	5.71					
	Cation - Anion Balance (%)	-0.5	-1.3	0.9					
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50					
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50					
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD					
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD					
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030					
	Antimony (Sb)-Dissolved (mg/L)	0.00049	0.00018	<0.00010					
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010					
	Barium (Ba)-Dissolved (mg/L)	0.0745	0.125	0.0698					
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020					
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2379531-1 WG 07-NOV-19 11:45 FR_GCMW- 2_QTR_2019-10- 07_N	L2379531-2 WG 07-NOV-19 10:00 FR_MW- 1B_QTR_2019-10- 07_N	L2379531-3 WG 07-NOV-19 11:00 FR_POTWELLS_Q TR_2019-10-07_N	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.017	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.0541	0.0125	0.0074	
	Calcium (Ca)-Dissolved (mg/L)	181	100	72.6	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00014	0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	0.00021	<0.00020	0.00070	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.144	0.0237	0.0059	
	Magnesium (Mg)-Dissolved (mg/L)	84.4	35.4	24.8	
	Manganese (Mn)-Dissolved (mg/L)	0.00038	<0.00010	0.00019	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00205	0.00114	0.000715	
	Nickel (Ni)-Dissolved (mg/L)	0.00254	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	3.87	1.20	0.683	
	Selenium (Se)-Dissolved (ug/L)	97.9	40.1	17.4	
	Silicon (Si)-Dissolved (mg/L)	2.00	1.82	1.46	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	3.52	1.29	0.761	
	Strontium (Sr)-Dissolved (mg/L)	0.287	0.183	0.138	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00737	0.00197	0.000994	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0024	<0.0010	0.0045	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2379531-1, -2, -3
Matrix Spike	Nitrate (as N)	MS-B	L2379531-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L2379531-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			



## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			

## Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                              Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191107-1416

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Scott Roughead

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903797</b>							
<b>WG3215184-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.0		%		85-115	08-NOV-19
<b>WG3215184-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	08-NOV-19
<b>WG3215184-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	08-NOV-19
<b>WG3215184-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	08-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904007</b>							
<b>WG3215492-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	09-NOV-19
<b>WG3215492-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3215628-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	13-NOV-19
<b>WG3215628-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-11</b>	<b>DUP</b>	<b>L2379531-3</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215339-10</b>	<b>LCS</b>							
Bromide (Br)			97.6		%		85-115	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	08-NOV-19
<b>WG3215339-12</b>	<b>MS</b>	<b>L2379531-3</b>						
Bromide (Br)			98.1		%		75-125	08-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904084</b>							
<b>WG3215681-7</b>	<b>DUP</b>	<b>L2379531-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	09-NOV-19
<b>WG3215681-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			91.4		%		80-120	09-NOV-19
<b>WG3215681-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4904084							
<b>WG3215681-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-19
<b>WG3215681-8</b>	<b>MS</b>	<b>L2379531-3</b>						
Dissolved Organic Carbon			87.4		%		70-130	09-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4904084							
<b>WG3215681-7</b>	<b>DUP</b>	<b>L2379531-2</b>						
Total Organic Carbon			<0.50	RPD-NA	mg/L	N/A	20	09-NOV-19
<b>WG3215681-6</b>	<b>LCS</b>							
Total Organic Carbon			97.1		%		80-120	09-NOV-19
<b>WG3215681-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	09-NOV-19
<b>WG3215681-8</b>	<b>MS</b>	<b>L2379531-3</b>						
Total Organic Carbon			90.7		%		70-130	09-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4903855							
<b>WG3215339-11</b>	<b>DUP</b>	<b>L2379531-3</b>						
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215339-10</b>	<b>LCS</b>							
Chloride (Cl)			100.6		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	08-NOV-19
<b>WG3215339-12</b>	<b>MS</b>	<b>L2379531-3</b>						
Chloride (Cl)			97.0		%		75-125	08-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4904007							
<b>WG3215492-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.6		%		90-110	09-NOV-19
<b>WG3215492-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	09-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4903855							
<b>WG3215339-11</b>	<b>DUP</b>	<b>L2379531-3</b>						
Fluoride (F)			0.206		mg/L	0.1	20	08-NOV-19
<b>WG3215339-10</b>	<b>LCS</b>							
Fluoride (F)			101.8		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	08-NOV-19
<b>WG3215339-12</b>	<b>MS</b>	<b>L2379531-3</b>						
Fluoride (F)			92.8		%		75-125	08-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4908847</b>							
<b>WG3219184-7</b>	<b>DUP</b>	<b>L2379531-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3219184-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.8		%		80-120	15-NOV-19
<b>WG3219184-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	15-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4905910</b>							
<b>WG3215628-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.7		%		80-120	13-NOV-19
Antimony (Sb)-Dissolved			99.1		%		80-120	13-NOV-19
Arsenic (As)-Dissolved			103.6		%		80-120	13-NOV-19
Barium (Ba)-Dissolved			100.1		%		80-120	13-NOV-19
Bismuth (Bi)-Dissolved			105.3		%		80-120	13-NOV-19
Boron (B)-Dissolved			94.5		%		80-120	13-NOV-19
Cadmium (Cd)-Dissolved			101.1		%		80-120	13-NOV-19
Calcium (Ca)-Dissolved			98.6		%		80-120	13-NOV-19
Chromium (Cr)-Dissolved			102.6		%		80-120	13-NOV-19
Cobalt (Co)-Dissolved			103.2		%		80-120	13-NOV-19
Copper (Cu)-Dissolved			102.2		%		80-120	13-NOV-19
Iron (Fe)-Dissolved			94.6		%		80-120	13-NOV-19
Lead (Pb)-Dissolved			97.0		%		80-120	13-NOV-19
Lithium (Li)-Dissolved			96.6		%		80-120	13-NOV-19
Magnesium (Mg)-Dissolved			99.1		%		80-120	13-NOV-19
Manganese (Mn)-Dissolved			104.3		%		80-120	13-NOV-19
Molybdenum (Mo)-Dissolved			103.8		%		80-120	13-NOV-19
Nickel (Ni)-Dissolved			101.2		%		80-120	13-NOV-19
Potassium (K)-Dissolved			105.6		%		80-120	13-NOV-19
Selenium (Se)-Dissolved			98.8		%		80-120	13-NOV-19
Silicon (Si)-Dissolved			99.3		%		60-140	13-NOV-19



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3215628-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			100.7		%		80-120	13-NOV-19
Sodium (Na)-Dissolved			110.7		%		80-120	13-NOV-19
Strontium (Sr)-Dissolved			107.0		%		80-120	13-NOV-19
Thallium (Tl)-Dissolved			96.9		%		80-120	13-NOV-19
Tin (Sn)-Dissolved			98.9		%		80-120	13-NOV-19
Titanium (Ti)-Dissolved			104.9		%		80-120	13-NOV-19
Uranium (U)-Dissolved			98.3		%		80-120	13-NOV-19
Vanadium (V)-Dissolved			101.6		%		80-120	13-NOV-19
Zinc (Zn)-Dissolved			98.4		%		80-120	13-NOV-19
<b>WG3215628-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3215628-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.00010		mg/L		0.00001	13-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909057</b>							
<b>WG3219029-10</b>	<b>LCS</b>							
Ammonia as N			99.1		%		85-115	14-NOV-19
<b>WG3219029-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-11</b>	<b>DUP</b>	<b>L2379531-3</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215339-10</b>	<b>LCS</b>							
Nitrite (as N)			97.5		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	08-NOV-19
<b>WG3215339-12</b>	<b>MS</b>	<b>L2379531-3</b>						
Nitrite (as N)			94.7		%		75-125	08-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-11</b>	<b>DUP</b>	<b>L2379531-3</b>						
Nitrate (as N)		2.77	2.76		mg/L	0.4	20	08-NOV-19
<b>WG3215339-10</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	08-NOV-19
<b>WG3215339-12</b>	<b>MS</b>	<b>L2379531-3</b>						
Nitrate (as N)			N/A	MS-B	%		-	08-NOV-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4903603							
WG3214902-11	CRM	CL-ORP						
ORP			226		mV		210-230	08-NOV-19
WG3214902-13	CRM	CL-ORP						
ORP			229		mV		210-230	08-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4903905							
WG3215416-14	LCS							
Phosphorus (P)-Total			99.3		%		80-120	09-NOV-19
WG3215416-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-NOV-19
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4904007							
WG3215492-8	LCS							
pH			7.01		pH		6.9-7.1	09-NOV-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4903541							
WG3214522-6	LCS							
Orthophosphate-Dissolved (as P)			101.5		%		80-120	08-NOV-19
WG3214522-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-NOV-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4903855							
WG3215339-11	DUP	L2379531-3						
Sulfate (SO4)		118	118		mg/L	0.1	20	08-NOV-19
WG3215339-10	LCS							
Sulfate (SO4)			98.9		%		90-110	08-NOV-19
WG3215339-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	08-NOV-19
WG3215339-12	MS	L2379531-3						
Sulfate (SO4)			N/A	MS-B	%		-	08-NOV-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4909193							
WG3216923-6	DUP	L2379531-2						
Total Dissolved Solids		516	524		mg/L	1.6	20	13-NOV-19
WG3216923-2	LCS							
Total Dissolved Solids			98.9		%		85-115	13-NOV-19





## Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4909193							
<b>WG3216923-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.5		%		85-115	13-NOV-19
<b>WG3216923-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	13-NOV-19
<b>WG3216923-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	13-NOV-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4903830							
<b>WG3215247-38</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			85.6		%		75-125	09-NOV-19
<b>WG3215247-42</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	09-NOV-19
<b>WG3215247-37</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-NOV-19
<b>WG3215247-41</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-NOV-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4907025							
<b>WG3216835-2</b>	<b>LCS</b>							
Total Suspended Solids			95.1		%		85-115	13-NOV-19
<b>WG3216835-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-NOV-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4903594							
<b>WG3214636-8</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	08-NOV-19
<b>WG3214636-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-NOV-19

# Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2379531

Report Date: 18-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	07-NOV-19 11:45	08-NOV-19 16:00	0.25	28	hours	EHTR-FM
	2	07-NOV-19 10:00	08-NOV-19 16:00	0.25	30	hours	EHTR-FM
	3	07-NOV-19 11:00	08-NOV-19 16:00	0.25	29	hours	EHTR-FM
pH	1	07-NOV-19 11:45	09-NOV-19 09:00	0.25	45	hours	EHTR-FM
	2	07-NOV-19 10:00	09-NOV-19 09:00	0.25	47	hours	EHTR-FM
	3	07-NOV-19 11:00	09-NOV-19 09:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2379531 were received on 08-NOV-19 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

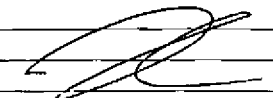
COC ID: 20191107-1416

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording River Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Scott Roughead			Lab Contact	Lyudmyln Shvets			Email 1:	david.burroughs@teck.com	X	X	X
Email	scott.roughead@teck.com			Email	Lyudmyln.Shvets@ALSGlobal.com			Email 2:	britt.anderson@teck.com	X	X	X
Address				Address	2559 29 Street NE			Email 3:	scott.roughead@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Jared.Ceyenne@teck.com	X	X	X
Phone Number	1-250-433-6976			Phone Number	403 407 1794			PO number				

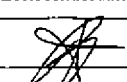
SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKN/TOC						
FR_GCMW-2_QTR_2019-10-07_N	FR_GCMW-2	WG		2019/11/07	11:45	G	5	1	1	1	1	1						
FR_MW-1B_QTR_2019-10-07_N	FR_MW-1B	WG		2019/11/07	10:00	G	5	1	1	1	1	1						
FR_POTWELLS_QTR_2019-10-07_N	FR_POTWELLS	WG		2019/11/07	11:00	G	5	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Britt Anderson	November 7 2019		11/08 8:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X	Britt Anderson	4039907060
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

Sampler's Signature	Date/Time
	November 7 2019

FC



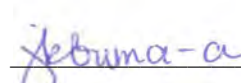
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 27-NOV-19  
Report Date: 04-DEC-19 15:43 (MT)  
Version: FINAL

Client Phone: 250-433-8467

## Certificate of Analysis

Lab Work Order #: L2388377  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191126  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2388377-1 WG 26-NOV-19 12:15 FR_TB-2A-2019- 11-26	L2388377-2 WG 26-NOV-19 10:00 FR_TB-2B-2019- 11-26	L2388377-3 WG 26-NOV-19 14:45 FR_TBSSMW-2- 2019-11-26	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	661	405	537	
	Hardness (as CaCO3) (mg/L)	165	231	303	
	pH (pH)	7.48	7.96	8.03	
	ORP (mV)	80.8	253	344	
	Total Suspended Solids (mg/L)	53.2	2.3	<1.0	
	Total Dissolved Solids (mg/L)	436 <sup>DLHC</sup>	232 <sup>DLHC</sup>	345 <sup>DLHC</sup>	
	Turbidity (NTU)	46.0	1.10	0.21	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	19.2	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	530	150	140	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	530	150	140	
	Ammonia as N (mg/L)	3.90 <sup>DLHC</sup>	0.0116	0.0236	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	
	Fluoride (F) (mg/L)	0.244 <sup>RRV</sup>	0.118	0.177	
	Ion Balance (%)	42.3 <sup>RRV</sup>	99.0	97.8	
	Nitrate (as N) (mg/L)	<0.0050	1.59	3.86	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	4.33	0.181	<0.050 <sup>TKNI</sup>	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0015	
	Phosphorus (P)-Total (mg/L)	0.0565	0.0044	0.0061	
	Sulfate (SO4) (mg/L)	<0.30	76.1	152	
	Anion Sum (meq/L)	10.6	4.71	6.24	
	Cation Sum (meq/L)	4.48 <sup>RRV</sup>	4.66	6.11	
	Cation - Anion Balance (%)	-40.6	-0.5	-1.1	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.56	1.26	1.31
Total Organic Carbon (mg/L)		4.27	1.46	1.28	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0037	<0.0010	0.0015	
	Antimony (Sb)-Dissolved (mg/L)	0.00059	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00099	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	2.48 <sup>RRV</sup>	0.0953	0.0683	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2388377-1 WG 26-NOV-19 12:15 FR_TB-2A-2019- 11-26	L2388377-2 WG 26-NOV-19 10:00 FR_TB-2B-2019- 11-26	L2388377-3 WG 26-NOV-19 14:45 FR_TBSSMW-2- 2019-11-26	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.0070	0.0137	0.0099	
	Calcium (Ca)-Dissolved (mg/L)	40.3	62.7	75.4	
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00013	0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00026	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.586	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.366	0.0059	0.0066	
	Magnesium (Mg)-Dissolved (mg/L)	15.6	18.0	28.0	
	Manganese (Mn)-Dissolved (mg/L)	0.0562	<0.00010	<0.00010	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0207	0.000371	0.000719	
	Nickel (Ni)-Dissolved (mg/L)	0.00073	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	3.74	0.445	0.678	
	Selenium (Se)-Dissolved (ug/L)	<0.050	16.6	36.3	
	Silicon (Si)-Dissolved (mg/L)	2.15	2.07	1.46	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	17.9	0.822	0.665	
	Strontium (Sr)-Dissolved (mg/L)	0.209	0.119	0.130	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	0.00041	<0.00010	0.00013	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000136	0.000446	0.00103	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0039	<0.0010	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2388377-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2388377-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B



## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**HG-T-CVAA-CL**            Water            Total Mercury in Water by CVAAS            EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**        Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**        Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

20191126

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4928357							
<b>WG3231035-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.6		%		85-115	28-NOV-19
<b>WG3231035-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	28-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4927809							
<b>WG3230595-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	27-NOV-19
<b>WG3230595-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4929981							
<b>WG3233250-3</b>	<b>DUP</b>	<b>L2388377-3</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	02-DEC-19
<b>WG3233250-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			102.0		%		80-120	02-DEC-19
<b>WG3233250-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-DEC-19
<b>WG3233250-4</b>	<b>MS</b>	<b>L2388377-3</b>						
Beryllium (Be)-Dissolved			106.3		%		70-130	02-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4927802							
<b>WG3230773-2</b>	<b>LCS</b>							
Bromide (Br)			98.8		%		85-115	27-NOV-19
<b>WG3230773-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4929076							
<b>WG3232273-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.4		%		80-120	29-NOV-19
<b>WG3232273-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4929076							
<b>WG3232273-2</b>	<b>LCS</b>							
Total Organic Carbon			105.6		%		80-120	29-NOV-19
<b>WG3232273-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-TOT-ORG-LOW-CL</b>									
Water									
Batch R4929076									
WG3232273-1 MB									
Total Organic Carbon			<0.50		mg/L		0.5	29-NOV-19	
<b>CL-IC-N-CL</b>									
Water									
Batch R4927802									
WG3230773-2 LCS									
Chloride (Cl)			100.6		%		90-110	27-NOV-19	
WG3230773-1 MB									
Chloride (Cl)			<0.50		mg/L		0.5	27-NOV-19	
<b>EC-L-PCT-CL</b>									
Water									
Batch R4927809									
WG3230595-8 LCS									
Conductivity (@ 25C)			94.9		%		90-110	27-NOV-19	
WG3230595-7 MB									
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-19	
<b>F-IC-N-CL</b>									
Water									
Batch R4927802									
WG3230773-2 LCS									
Fluoride (F)			99.9		%		90-110	27-NOV-19	
WG3230773-1 MB									
Fluoride (F)			<0.020		mg/L		0.02	27-NOV-19	
<b>HG-D-CVAA-CL</b>									
Water									
Batch R4929080									
WG3232281-3 DUP									
Mercury (Hg)-Dissolved		L2388377-2	<0.0000050	<0.000005C	mg/L	RPD-NA	N/A	20	28-NOV-19
WG3232281-2 LCS									
Mercury (Hg)-Dissolved			108.0		%		80-120	28-NOV-19	
WG3232281-1 MB									
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-19	
WG3232281-4 MS									
Mercury (Hg)-Dissolved		L2388377-3	98.7		%		70-130	28-NOV-19	
<b>HG-T-CVAA-CL</b>									
Water									
Batch R4929080									
WG3232281-3 DUP									
Mercury (Hg)-Total		L2388377-2	<0.0000050	<0.000005C	mg/L	RPD-NA	N/A	20	28-NOV-19
WG3232281-2 LCS									
Mercury (Hg)-Total			110.0		%		80-120	28-NOV-19	



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929080</b>							
<b>WG3232281-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-NOV-19
<b>WG3232281-4 MS</b>		<b>L2388377-3</b>						
Mercury (Hg)-Total			109.0		%		70-130	28-NOV-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927949</b>							
<b>WG3230889-3 DUP</b>		<b>L2388377-2</b>						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-NOV-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-NOV-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-NOV-19
Barium (Ba)-Dissolved		0.0953	0.0911		mg/L	4.6	20	28-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-NOV-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-NOV-19
Cadmium (Cd)-Dissolved		0.0000137	0.0000085	J	mg/L	0.000005	0.00001	28-NOV-19
Calcium (Ca)-Dissolved		62.7	65.7		mg/L	4.6	20	28-NOV-19
Chromium (Cr)-Dissolved		0.00013	0.00013		mg/L	0.2	20	28-NOV-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-NOV-19
Copper (Cu)-Dissolved		0.00026	<0.00020	RPD-NA	mg/L	N/A	20	28-NOV-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-NOV-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-NOV-19
Lithium (Li)-Dissolved		0.0059	0.0060		mg/L	2.5	20	28-NOV-19
Magnesium (Mg)-Dissolved		18.0	18.8		mg/L	4.7	20	28-NOV-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-NOV-19
Molybdenum (Mo)-Dissolved		0.000371	0.000365		mg/L	1.6	20	28-NOV-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-NOV-19
Potassium (K)-Dissolved		0.445	0.460		mg/L	3.2	20	28-NOV-19
Selenium (Se)-Dissolved		0.0166	0.0156		mg/L	6.1	20	28-NOV-19
Silicon (Si)-Dissolved		2.07	2.02		mg/L	2.4	20	28-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-NOV-19
Sodium (Na)-Dissolved		0.822	0.862		mg/L	4.7	20	28-NOV-19
Strontium (Sr)-Dissolved		0.119	0.129		mg/L	7.3	20	28-NOV-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	28-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-NOV-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	28-NOV-19
Uranium (U)-Dissolved		0.000446	0.000490		mg/L	9.2	20	28-NOV-19



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927949</b>							
<b>WG3230889-3</b>	<b>DUP</b>	<b>L2388377-2</b>						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	28-NOV-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3230889-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			96.2		%		80-120	29-NOV-19
Antimony (Sb)-Dissolved			100.7		%		80-120	29-NOV-19
Arsenic (As)-Dissolved			99.6		%		80-120	29-NOV-19
Barium (Ba)-Dissolved			97.6		%		80-120	29-NOV-19
Bismuth (Bi)-Dissolved			101.8		%		80-120	29-NOV-19
Boron (B)-Dissolved			95.4		%		80-120	29-NOV-19
Cadmium (Cd)-Dissolved			99.8		%		80-120	29-NOV-19
Calcium (Ca)-Dissolved			98.3		%		80-120	29-NOV-19
Chromium (Cr)-Dissolved			95.2		%		80-120	29-NOV-19
Cobalt (Co)-Dissolved			96.4		%		80-120	29-NOV-19
Copper (Cu)-Dissolved			97.4		%		80-120	29-NOV-19
Iron (Fe)-Dissolved			93.5		%		80-120	29-NOV-19
Lead (Pb)-Dissolved			101.7		%		80-120	29-NOV-19
Lithium (Li)-Dissolved			94.1		%		80-120	29-NOV-19
Magnesium (Mg)-Dissolved			102.9		%		80-120	29-NOV-19
Manganese (Mn)-Dissolved			95.5		%		80-120	29-NOV-19
Molybdenum (Mo)-Dissolved			104.2		%		80-120	29-NOV-19
Nickel (Ni)-Dissolved			98.4		%		80-120	29-NOV-19
Potassium (K)-Dissolved			101.1		%		80-120	29-NOV-19
Selenium (Se)-Dissolved			99.0		%		80-120	29-NOV-19
Silicon (Si)-Dissolved			97.8		%		60-140	29-NOV-19
Silver (Ag)-Dissolved			103.2		%		80-120	29-NOV-19
Sodium (Na)-Dissolved			100.0		%		80-120	29-NOV-19
Strontium (Sr)-Dissolved			103.2		%		80-120	29-NOV-19
Thallium (Tl)-Dissolved			103.0		%		80-120	29-NOV-19
Tin (Sn)-Dissolved			100.8		%		80-120	29-NOV-19
Titanium (Ti)-Dissolved			91.7		%		80-120	29-NOV-19
Uranium (U)-Dissolved			103.4		%		80-120	29-NOV-19
Vanadium (V)-Dissolved			100.0		%		80-120	29-NOV-19
Zinc (Zn)-Dissolved			97.3		%		80-120	29-NOV-19
<b>WG3230889-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-NOV-19



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927949</b>							
<b>WG3230889-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-NOV-19
<b>WG3230889-4</b>	<b>MS</b>	<b>L2388377-3</b>						
Aluminum (Al)-Dissolved			100.6		%		70-130	29-NOV-19
Antimony (Sb)-Dissolved			110.9		%		70-130	29-NOV-19
Arsenic (As)-Dissolved			107.6		%		70-130	29-NOV-19
Barium (Ba)-Dissolved			111.3		%		70-130	29-NOV-19



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927949</b>							
<b>WG3230889-4</b>	<b>MS</b>	<b>L2388377-3</b>						
Bismuth (Bi)-Dissolved			108.3		%		70-130	29-NOV-19
Boron (B)-Dissolved			120.7		%		70-130	29-NOV-19
Cadmium (Cd)-Dissolved			111.4		%		70-130	29-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Chromium (Cr)-Dissolved			106.8		%		70-130	29-NOV-19
Cobalt (Co)-Dissolved			104.5		%		70-130	29-NOV-19
Copper (Cu)-Dissolved			105.8		%		70-130	29-NOV-19
Iron (Fe)-Dissolved			105.6		%		70-130	29-NOV-19
Lead (Pb)-Dissolved			110.1		%		70-130	29-NOV-19
Lithium (Li)-Dissolved			115.7		%		70-130	29-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Manganese (Mn)-Dissolved			105.0		%		70-130	29-NOV-19
Molybdenum (Mo)-Dissolved			107.3		%		70-130	29-NOV-19
Nickel (Ni)-Dissolved			107.3		%		70-130	29-NOV-19
Potassium (K)-Dissolved			110.7		%		70-130	29-NOV-19
Selenium (Se)-Dissolved			113.2		%		70-130	29-NOV-19
Silicon (Si)-Dissolved			97.9		%		70-130	29-NOV-19
Silver (Ag)-Dissolved			107.0		%		70-130	29-NOV-19
Sodium (Na)-Dissolved			106.8		%		70-130	29-NOV-19
Strontium (Sr)-Dissolved			110.7		%		70-130	29-NOV-19
Thallium (Tl)-Dissolved			112.7		%		70-130	29-NOV-19
Tin (Sn)-Dissolved			108.1		%		70-130	29-NOV-19
Titanium (Ti)-Dissolved			103.0		%		70-130	29-NOV-19
Uranium (U)-Dissolved			110.5		%		70-130	29-NOV-19
Vanadium (V)-Dissolved			110.0		%		70-130	29-NOV-19
Zinc (Zn)-Dissolved			105.3		%		70-130	29-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927156</b>							
<b>WG3229901-10</b>	<b>LCS</b>							
Ammonia as N			96.6		%		85-115	27-NOV-19
<b>WG3229901-6</b>	<b>LCS</b>							
Ammonia as N			91.6		%		85-115	27-NOV-19
<b>WG3229901-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-NOV-19
<b>WG3229901-9</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4927156							
<b>WG3229901-9 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	27-NOV-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4927802							
<b>WG3230773-2 LCS</b>								
Nitrite (as N)			98.8		%		90-110	27-NOV-19
<b>WG3230773-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	27-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4927802							
<b>WG3230773-2 LCS</b>								
Nitrate (as N)			102.2		%		90-110	27-NOV-19
<b>WG3230773-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	27-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4927819							
<b>WG3230114-1 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	27-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4928098							
<b>WG3230708-14 LCS</b>								
Phosphorus (P)-Total			107.9		%		80-120	28-NOV-19
<b>WG3230708-13 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4927809							
<b>WG3230595-8 LCS</b>								
pH			7.02		pH		6.9-7.1	27-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4927564							
<b>WG3229873-2 LCS</b>								
Orthophosphate-Dissolved (as P)			100.4		%		80-120	27-NOV-19
<b>WG3229873-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-NOV-19



## Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4927564							
WG3229873-4	MS	L2388377-2						
Orthophosphate-Dissolved (as P)			105.0		%		70-130	27-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4927802							
WG3230773-2	LCS							
Sulfate (SO4)			105.5		%		90-110	27-NOV-19
WG3230773-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4928607							
WG3230861-5	LCS							
Total Dissolved Solids			102.7		%		85-115	28-NOV-19
WG3230861-4	MB							
Total Dissolved Solids			<10		mg/L		10	28-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4928084							
WG3231034-6	LCS							
Total Kjeldahl Nitrogen			104.6		%		75-125	28-NOV-19
WG3231034-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-NOV-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4929177							
WG3231489-2	LCS							
Total Suspended Solids			94.0		%		85-115	29-NOV-19
WG3231489-1	MB							
Total Suspended Solids			<1.0		mg/L		1	29-NOV-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R4927302							
WG3230113-3	DUP	L2388377-1						
Turbidity			46.1		NTU	0.2	15	27-NOV-19
WG3230113-2	LCS							
Turbidity			99.0		%		85-115	27-NOV-19
WG3230113-1	MB							
Turbidity			<0.10		NTU		0.1	27-NOV-19

# Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2388377

Report Date: 04-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-NOV-19 12:15	27-NOV-19 13:00	0.25	25	hours	EHTR-FM
	2	26-NOV-19 10:00	27-NOV-19 13:45	0.25	28	hours	EHTR-FM
	3	26-NOV-19 14:45	27-NOV-19 13:45	0.25	23	hours	EHTR-FM
pH	1	26-NOV-19 12:15	27-NOV-19 15:00	0.25	27	hours	EHTR-FM
	2	26-NOV-19 10:00	27-NOV-19 15:00	0.25	29	hours	EHTR-FM
	3	26-NOV-19 14:45	27-NOV-19 15:00	0.25	24	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2388377 were received on 27-NOV-19 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20191126	TURNAROUND TIME:	Regular	RUSH:	
PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name / Job#	Teck Coal	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets	Email 1:	tom.jeffery@teck.com X X X
Email	Tom.Jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	Email 2:	teckcoal@equisonline.com X X X
Address	Suite 1000, 205 - 9th Ave S.E.	Address	2559 29 Street NE	Email 3:	gregory.jones@golder.com X X X
				Email 4:	Scott.Roughead@teck.com X X X
City	Calgary	Province	AB	Email 5:	
Postal Code	T2G 0R3	Country	Canada		
Phone Number	250 433-6716	Phone Number	403 407 1794	PO number	VPO00632083

SAMPLE DETAILS								ANALYSIS REQUESTED						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Ycs/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
FR_TB-2A-2019-11-26	FR_TB-2A	WG	N	11/26/2019	12:15	G	6	1	1	1	1	1	1	
FR_TB-2B-2019-11-26	FR_TB-2B	WG	N	11/26/2019	10:00	G	6	1	1	1	1	1	1	
FR_TBSSMW-2-2019-11-26	FR_TBSSMW-2	WG	N	11/26/2019	14:45	G	6	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			DK	11/27 0840

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin	Mobile #	250-464-5914	
Sampler's Signature		Date/Time	November 26, 2019	

502



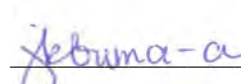
TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 28-NOV-19  
Report Date: 05-DEC-19 14:33 (MT)  
Version: FINAL

Client Phone: 250-433-6716

## Certificate of Analysis

Lab Work Order #: L2389098  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATION  
C of C Numbers: 20191127  
Legal Site Desc:

  
\_\_\_\_\_  
Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2389098-1	L2389098-2	L2389098-3	L2389098-4	L2389098-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	27-NOV-19	27-NOV-19	27-NOV-19	27-NOV-19	27-NOV-19
		Sampled Time	11:10	13:10	13:15	13:25	15:20
		Client ID	FR_CB-1C-2019-11-27	FR_KB-1-2019-11-27	FR_DC2-2019-11-27	FR_FLD2-2019-11-27	FR_LM-3B-2019-11-27
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1540	1940	1960	<2.0	1010
	Hardness (as CaCO3) (mg/L)		814	1190	1200	<0.50	369
	pH (pH)		7.74	7.39	7.30	5.47	7.73
	ORP (mV)		362	429	377	457	329
	Total Suspended Solids (mg/L)		66.9	<1.0	<1.0	<1.0	18.7
	Total Dissolved Solids (mg/L)		1330 <sup>DLHC</sup>	1770 <sup>DLHC</sup>	1710 <sup>DLHC</sup>	<10	687 <sup>DLHC</sup>
	Turbidity (NTU)		88.2	0.20	0.57	<0.10	16.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		8.6	25.4	25.6	<1.0	6.2
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		310	436	443	<1.0	438
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		310	436	443	<1.0	438
	Ammonia as N (mg/L)		0.184	<0.0050	0.0200	0.0259 <sup>RRV</sup>	0.0818
	Bromide (Br) (mg/L)		<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)		12.6 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50	9.9 <sup>DLHC</sup>
	Fluoride (F) (mg/L)		0.25 <sup>DLHC</sup>	0.13 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>	<0.020	0.24 <sup>DLHC</sup>
	Ion Balance (%)		87.6 <sup>DLHC</sup>	93.8 <sup>DLHC</sup>	94.3 <sup>DLHC</sup>	0.0	97.4 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)		56.6 <sup>DLHC</sup>	65.1 <sup>DLHC</sup>	64.5 <sup>DLHC</sup>	<0.0050	<0.025 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050	0.340
	Orthophosphate-Dissolved (as P) (mg/L)		0.0076	0.0027	0.0028	<0.0010	0.0037
	Phosphorus (P)-Total (mg/L)		0.0871	0.0030	0.0023	<0.0020	0.0174
	Sulfate (SO4) (mg/L)		435 <sup>DLHC</sup>	592 <sup>DLHC</sup>	591 <sup>DLHC</sup>	<0.30	166 <sup>DLHC</sup>
	Anion Sum (meq/L)		19.6	25.7	25.7	<0.10	12.5
	Cation Sum (meq/L)		17.2	24.1	24.3	<0.10	12.2
	Cation - Anion Balance (%)		-6.6	-3.2	-2.9	0.0	-1.3
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.91	0.56	0.58	<0.50
Total Organic Carbon (mg/L)			7.57	1.10	0.56	<0.50	8.16
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)		0.0000083	<0.0000050	<0.0000050	<0.0000050	<0.0000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0180	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00051	0.00040	0.00038	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00070	<0.00010	<0.00010	<0.00010	0.00290
	Barium (Ba)-Dissolved (mg/L)		0.321	0.0540	0.0545	<0.00010	0.107
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2389098-1	L2389098-2	L2389098-3	L2389098-4	L2389098-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	27-NOV-19	27-NOV-19	27-NOV-19	27-NOV-19	27-NOV-19
		Sampled Time	11:10	13:10	13:15	13:25	15:20
		Client ID	FR_CB-1C-2019-11-27	FR_KB-1-2019-11-27	FR_DC2-2019-11-27	FR_FLD2-2019-11-27	FR_LM-3B-2019-11-27
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.028	0.029	0.029	<0.010	0.032
	Cadmium (Cd)-Dissolved (ug/L)		0.0169	0.476	0.442	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		175	277	282	<0.050	103
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		0.59	0.84	0.80	<0.10	0.61
	Copper (Cu)-Dissolved (mg/L)		<0.00020	0.00020	0.00106	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.076	<0.010	<0.010	<0.010	0.388
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.293	0.0832	0.0832	<0.0010	0.0105
	Magnesium (Mg)-Dissolved (mg/L)		91.6	121	120	<0.10	27.3
	Manganese (Mn)-Dissolved (mg/L)		0.482	<0.00010	0.00018	<0.00010	0.982
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00973	0.00120	0.00123	<0.000050	0.00251
	Nickel (Ni)-Dissolved (mg/L)		0.0101	0.0120	0.0120	<0.00050	0.00125
	Potassium (K)-Dissolved (mg/L)		3.76	4.63	4.57	<0.050	3.43
	Selenium (Se)-Dissolved (ug/L)		120	215	208	<0.050	0.241
	Silicon (Si)-Dissolved (mg/L)		3.88	2.50	2.53	<0.050	7.12
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		18.7	3.88	3.93	<0.050	107
	Strontium (Sr)-Dissolved (mg/L)		0.505	0.253	0.253	<0.00020	0.283
	Thallium (Tl)-Dissolved (mg/L)		0.000013	0.000019	0.000017	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		0.00019	<0.00010	0.00018	<0.00010	0.00011
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00898	0.00983	0.00968	<0.000010	0.00340
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0021	0.0094	0.0097	<0.0010	0.0013

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Uranium (U)-Dissolved	MES	L2389098-1, -2, -3, -4, -5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2389098-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.





## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0  
 Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928357</b>							
<b>WG3231035-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	28-NOV-19
<b>WG3231035-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.4		%		85-115	28-NOV-19
<b>WG3231035-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	28-NOV-19
<b>WG3231035-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	28-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928557</b>							
<b>WG3231537-3</b>	<b>DUP</b>	<b>L2389098-2</b>						
Alkalinity, Total (as CaCO3)		436	441		mg/L	1.1	20	28-NOV-19
<b>WG3231537-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	28-NOV-19
<b>WG3231537-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233997-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.4		%		80-120	03-DEC-19
<b>WG3233997-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-DEC-19
<b>WG3233997-4</b>	<b>MS</b>	<b>L2389098-1</b>						
Beryllium (Be)-Dissolved			89.3		%		70-130	03-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928441</b>							
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Bromide (Br)			95.3		%		85-115	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Bromide (Br)			97.8		%		75-125	28-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929294</b>							
<b>WG3232495-11</b>	<b>DUP</b>	<b>L2389098-4</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-NOV-19
<b>WG3232495-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.9		%		80-120	30-NOV-19
<b>WG3232495-9</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.0		%		80-120	30-NOV-19
<b>WG3232495-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
<b>WG3232495-8</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
<b>WG3232495-10</b>	<b>MS</b>	<b>L2389098-4</b>						
Dissolved Organic Carbon			88.4		%		70-130	30-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929294</b>							
<b>WG3232495-11</b>	<b>DUP</b>	<b>L2389098-4</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-NOV-19
<b>WG3232495-2</b>	<b>LCS</b>							
Total Organic Carbon			92.7		%		80-120	30-NOV-19
<b>WG3232495-9</b>	<b>LCS</b>							
Total Organic Carbon			85.4		%		80-120	30-NOV-19
<b>WG3232495-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
<b>WG3232495-8</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
<b>WG3232495-10</b>	<b>MS</b>	<b>L2389098-4</b>						
Total Organic Carbon			97.0		%		70-130	30-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928441</b>							
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Chloride (Cl)			99.4		%		90-110	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Chloride (Cl)			110.8		%		75-125	28-NOV-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Batch R4928557</b>								
<b>WG3231537-3</b>	<b>DUP</b>	<b>L2389098-2</b>						
Conductivity (@ 25C)		1940	1950		uS/cm	0.4	10	28-NOV-19
<b>WG3231537-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.3		%		90-110	28-NOV-19
<b>WG3231537-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-NOV-19
<b>F-IC-N-CL</b>								
<b>Batch R4928441</b>								
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Fluoride (F)			101.0		%		90-110	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Fluoride (F)			117.0		%		75-125	28-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4929433</b>								
<b>WG3232386-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.1		%		80-120	01-DEC-19
<b>WG3232386-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-DEC-19
<b>HG-T-CVAA-VA</b>								
<b>Batch R4929071</b>								
<b>WG3232253-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.8		%		80-120	30-NOV-19
<b>WG3232253-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	30-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4932389</b>								
<b>WG3233997-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.6		%		80-120	03-DEC-19
Antimony (Sb)-Dissolved			99.4		%		80-120	03-DEC-19
Arsenic (As)-Dissolved			98.0		%		80-120	03-DEC-19
Barium (Ba)-Dissolved			100.4		%		80-120	03-DEC-19
Bismuth (Bi)-Dissolved			94.5		%		80-120	03-DEC-19
Boron (B)-Dissolved			95.3		%		80-120	03-DEC-19



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233997-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			99.8		%		80-120	03-DEC-19
Calcium (Ca)-Dissolved			96.4		%		80-120	03-DEC-19
Chromium (Cr)-Dissolved			97.8		%		80-120	03-DEC-19
Cobalt (Co)-Dissolved			100.1		%		80-120	03-DEC-19
Copper (Cu)-Dissolved			99.8		%		80-120	03-DEC-19
Iron (Fe)-Dissolved			99.9		%		80-120	03-DEC-19
Lead (Pb)-Dissolved			94.3		%		80-120	03-DEC-19
Lithium (Li)-Dissolved			93.9		%		80-120	03-DEC-19
Magnesium (Mg)-Dissolved			93.3		%		80-120	03-DEC-19
Manganese (Mn)-Dissolved			98.1		%		80-120	03-DEC-19
Molybdenum (Mo)-Dissolved			100.5		%		80-120	03-DEC-19
Nickel (Ni)-Dissolved			99.4		%		80-120	03-DEC-19
Potassium (K)-Dissolved			101.4		%		80-120	03-DEC-19
Selenium (Se)-Dissolved			94.6		%		80-120	03-DEC-19
Silicon (Si)-Dissolved			110.6		%		60-140	03-DEC-19
Silver (Ag)-Dissolved			100.7		%		80-120	03-DEC-19
Sodium (Na)-Dissolved			103.6		%		80-120	03-DEC-19
Strontium (Sr)-Dissolved			104.1		%		80-120	03-DEC-19
Thallium (Tl)-Dissolved			97.0		%		80-120	03-DEC-19
Tin (Sn)-Dissolved			97.6		%		80-120	03-DEC-19
Titanium (Ti)-Dissolved			95.0		%		80-120	03-DEC-19
Uranium (U)-Dissolved			120.6	MES	%		80-120	03-DEC-19
Vanadium (V)-Dissolved			101.4		%		80-120	03-DEC-19
Zinc (Zn)-Dissolved			99.1		%		80-120	03-DEC-19
<b>WG3233997-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233997-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
<b>WG3233997-4</b>	<b>MS</b>	<b>L2389098-1</b>						
Aluminum (Al)-Dissolved			92.9		%		70-130	03-DEC-19
Antimony (Sb)-Dissolved			98.2		%		70-130	03-DEC-19
Arsenic (As)-Dissolved			100.6		%		70-130	03-DEC-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Bismuth (Bi)-Dissolved			77.7		%		70-130	03-DEC-19
Boron (B)-Dissolved			96.7		%		70-130	03-DEC-19
Cadmium (Cd)-Dissolved			94.7		%		70-130	03-DEC-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Chromium (Cr)-Dissolved			94.4		%		70-130	03-DEC-19
Cobalt (Co)-Dissolved			91.6		%		70-130	03-DEC-19
Copper (Cu)-Dissolved			88.4		%		70-130	03-DEC-19
Iron (Fe)-Dissolved			92.1		%		70-130	03-DEC-19





## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233997-4</b>	<b>MS</b>	<b>L2389098-1</b>						
Lead (Pb)-Dissolved			84.8		%		70-130	03-DEC-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Molybdenum (Mo)-Dissolved			95.4		%		70-130	03-DEC-19
Nickel (Ni)-Dissolved			90.2		%		70-130	03-DEC-19
Potassium (K)-Dissolved			93.5		%		70-130	03-DEC-19
Selenium (Se)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Silicon (Si)-Dissolved			99.2		%		70-130	03-DEC-19
Silver (Ag)-Dissolved			82.6		%		70-130	03-DEC-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Thallium (Tl)-Dissolved			87.6		%		70-130	03-DEC-19
Tin (Sn)-Dissolved			97.5		%		70-130	03-DEC-19
Titanium (Ti)-Dissolved			93.5		%		70-130	03-DEC-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	03-DEC-19
Vanadium (V)-Dissolved			97.8		%		70-130	03-DEC-19
Zinc (Zn)-Dissolved			92.2		%		70-130	03-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928321</b>							
<b>WG3230803-14</b>	<b>LCS</b>							
Ammonia as N			98.1		%		85-115	28-NOV-19
<b>WG3230803-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928441</b>							
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Nitrite (as N)			99.8		%		90-110	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Nitrite (as N)			112.4		%		75-125	28-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928441</b>							
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Nitrate (as N)			103.4		%		90-110	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Nitrate (as N)			115.7		%		75-125	28-NOV-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928342</b>							
<b>WG3231164-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	28-NOV-19
<b>WG3231164-2</b>	<b>DUP</b>	<b>L2389098-5</b>						
ORP		329	338	J	mV	8.9	15	28-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928653</b>							
<b>WG3231725-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			111.8		%		80-120	29-NOV-19
<b>WG3231725-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-NOV-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928557</b>							
<b>WG3231537-3</b>	<b>DUP</b>	<b>L2389098-2</b>						
pH		7.39	7.29	J	pH	0.10	0.2	28-NOV-19
<b>WG3231537-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	28-NOV-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928424</b>							
<b>WG3231075-3</b>	<b>DUP</b>	<b>L2389098-3</b>						
Orthophosphate-Dissolved (as P)		0.0028	0.0030		mg/L	8.0	20	28-NOV-19
<b>WG3231075-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	28-NOV-19
<b>WG3231075-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-NOV-19
<b>WG3231075-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Orthophosphate-Dissolved (as P)			98.5		%		70-130	28-NOV-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928441</b>							
<b>WG3231543-3</b>	<b>DUP</b>	<b>L2389098-4</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3231543-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.5		%		90-110	28-NOV-19
<b>WG3231543-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-NOV-19
<b>WG3231543-4</b>	<b>MS</b>	<b>L2389098-4</b>						
Sulfate (SO4)			108.3		%		75-125	28-NOV-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4931109</b>							
<b>WG3233086-2</b>	<b>LCS</b>							
Total Dissolved Solids			102.9		%		85-115	02-DEC-19
<b>WG3233086-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-DEC-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928780</b>							
<b>WG3231885-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.7		%		75-125	29-NOV-19
<b>WG3231885-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4931108</b>							
<b>WG3233082-2</b>	<b>LCS</b>							
Total Suspended Solids			93.2		%		85-115	02-DEC-19
<b>WG3233082-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-DEC-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4928355</b>							
<b>WG3231159-3</b>	<b>DUP</b>	<b>L2389098-1</b>						
Turbidity		88.2	88.6		NTU	0.5	15	28-NOV-19
<b>WG3231159-2</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	28-NOV-19
<b>WG3231159-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-NOV-19

# Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2389098

Report Date: 05-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	27-NOV-19 11:10	28-NOV-19 18:00	0.25	31	hours	EHTR-FM
	2	27-NOV-19 13:10	28-NOV-19 18:00	0.25	29	hours	EHTR-FM
	3	27-NOV-19 13:15	28-NOV-19 18:00	0.25	29	hours	EHTR-FM
	4	27-NOV-19 13:25	28-NOV-19 18:00	0.25	29	hours	EHTR-FM
	5	27-NOV-19 15:20	28-NOV-19 18:00	0.25	27	hours	EHTR-FM
pH	1	27-NOV-19 11:10	28-NOV-19 14:00	0.25	27	hours	EHTR-FM
	2	27-NOV-19 13:10	28-NOV-19 14:00	0.25	25	hours	EHTR-FM
	3	27-NOV-19 13:15	28-NOV-19 14:00	0.25	25	hours	EHTR-FM
	4	27-NOV-19 13:25	28-NOV-19 14:00	0.25	24	hours	EHTR-FM
	5	27-NOV-19 15:20	28-NOV-19 14:00	0.25	23	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2389098 were received on 28-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	20191127	TURNAROUND TIME:	Regular	RUSH:
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Teck Coal	Lab Name	ALS Calgary	Report Format / Distribution
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets	Excel
Email	Tom.Jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	PDF
Address	Suite 1000, 205 - 9th Ave S.E.	Address	2559 29 Street NE	EDD
City	Calgary	City	Calgary	
Postal Code	T2G 0R3	Postal Code	T1Y 7B5	
Phone Number	250 433-6716	Phone Number	403 407 1794	
				PO number
				VPO00632083

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.	ANALYSIS REQUESTED										
									TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	F	N	
FR_CB-1C-2019-11-27	FR_CB-1C	WG	N	11/27/2019	11:10	G	6	NONE	H2SO4	H2SO4		HNO3	HCL		HCL				
FR_KB-1-2019-11-27	FR_KB-1	WG	N	11/27/2019	13:10	G	6												
FR_DC2-2019-11-27	FR_DC2	WG	N	11/27/2019	13:15	G	6												
FR_FLD2-2019-11-27	FR_FLD2	WG	N	11/27/2019	13:20	G	6												
FR_LM-3B-2019-11-27	FR_LM-3B	WG	N	11/27/2019	15:20	G	6												

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
All samples are field filtered and preserved as required.			<i>JK</i>	11/28 10:00

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin		Mobile #	250-464-5914
Sampler's Signature	<i>[Signature]</i>		Date/Time	November 27, 2019

50



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 05-DEC-19  
Report Date: 20-DEC-19 11:05 (MT)  
Version: FINAL REV. 2

Client Phone: 250-433-8467

## Certificate of Analysis

Lab Work Order #: L2392812  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20191204  
Legal Site Desc:

Comments: Sample ID update

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2392812-1 WG 04-DEC-19 10:25 FR_TBSSMW-1- 2019-12-04	L2392812-2 WG 04-DEC-19 12:10 FR_LP-3B-2019- 12-04	L2392812-3 WG 04-DEC-19 14:05 FR_LP-2B-2019- 12-04	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	340	598	1060	
	Hardness (as CaCO3) (mg/L)	146	361	697	
	pH (pH)	8.28	8.16	7.81	
	ORP (mV)	299	448	461	
	Total Suspended Solids (mg/L)	1.8	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	186 <sup>DLHC</sup>	379 <sup>DLHC</sup>	722 <sup>DLHC</sup>	
	Turbidity (NTU)	1.10	0.82	0.45	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	1.0	31.8	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	159	287	540	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	159	287	540	
	Ammonia as N (mg/L)	2.39 <sup>DLHC</sup>	0.0216	0.0107	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.25	<sup>DLHC</sup>
	Chloride (Cl) (mg/L)	0.52	0.76	2.9	<sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.300	0.140	<0.10	<sup>DLHC</sup>
	Ion Balance (%)	111	108	115	
	Nitrate (as N) (mg/L)	<0.0050	0.0111	5.05	<sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0010	0.0011	<0.0050	<sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	3.27	0.109	0.197	<sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020	0.0021	0.0056	
	Phosphorus (P)-Total (mg/L)	0.0051 <sup>DLM</sup>	0.0079 <sup>DLM</sup>	0.0068	<sup>DLM</sup>
	Sulfate (SO4) (mg/L)	18.2	48.8	48.8	<sup>DLHC</sup>
	Anion Sum (meq/L)	3.58	6.78	12.3	
	Cation Sum (meq/L)	3.97	7.32	14.1	
	Cation - Anion Balance (%)	5.2	3.8	6.9	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.67	1.71	2.32
Total Organic Carbon (mg/L)		1.52	1.56	3.27	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0022	0.0010	0.0010	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00129	0.00094	0.00026	
	Barium (Ba)-Dissolved (mg/L)	1.98	0.114	0.203	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2392812-1 WG 04-DEC-19 10:25 FR_TBSSMW-1- 2019-12-04	L2392812-2 WG 04-DEC-19 12:10 FR_LP-3B-2019- 12-04	L2392812-3 WG 04-DEC-19 14:05 FR_LP-2B-2019- 12-04	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.012	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (ug/L)	0.0060	0.0053	0.0144	
	Calcium (Ca)-Dissolved (mg/L)	12.8	92.3	199	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00082	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.18	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00031	0.00040	
	Iron (Fe)-Dissolved (mg/L)	0.230	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.204	0.0032	0.0047	
	Magnesium (Mg)-Dissolved (mg/L)	27.7	31.7	48.7	
	Manganese (Mn)-Dissolved (mg/L)	0.0380	0.226	0.00834	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0143	0.00224	0.000294	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00115	0.00151	
	Potassium (K)-Dissolved (mg/L)	6.25	1.15	1.73	
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	0.592	
	Silicon (Si)-Dissolved (mg/L)	2.46	5.68	9.91	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	16.3	1.66	2.59	
	Strontium (Sr)-Dissolved (mg/L)	0.227	0.113	0.196	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000013	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00012	0.00012	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000160	0.00117	0.000917	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0042	0.0017	0.0142	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2392812-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2392812-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2392812-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**HG-T-CVAA-CL**            Water            Total Mercury in Water by CVAAS            EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**        Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**        Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

20191204

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 1 of 10

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4938249</b>							
<b>WG3238199-12</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.1		%		85-115	06-DEC-19
<b>WG3238199-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	06-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4940534</b>							
<b>WG3239947-15</b>	<b>DUP</b>	<b>L2392812-3</b>						
Alkalinity, Total (as CaCO3)		540	562		mg/L	4.0	20	10-DEC-19
<b>WG3239947-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.5		%		85-115	10-DEC-19
<b>WG3239947-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-DEC-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936743</b>							
<b>WG3237122-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			110.0		%		80-120	06-DEC-19
<b>WG3237122-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.00020		mg/L		0.0002	06-DEC-19
<b>WG3237122-6</b>	<b>MS</b>	<b>L2392812-3</b>						
Beryllium (Be)-Dissolved			117.4		%		70-130	06-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4940780</b>							
<b>WG3240176-11</b>	<b>DUP</b>	<b>L2392812-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	06-DEC-19
<b>WG3240176-10</b>	<b>LCS</b>							
Bromide (Br)			103.7		%		85-115	06-DEC-19
<b>WG3240176-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-DEC-19
<b>WG3240176-12</b>	<b>MS</b>	<b>L2392812-1</b>						
Bromide (Br)			100.9		%		75-125	06-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4941474</b>							
<b>WG3238999-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.4		%		80-120	10-DEC-19
<b>WG3238999-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch R4941474								
WG3238999-6 LCS								
Total Organic Carbon			109.1		%		80-120	10-DEC-19
WG3238999-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	10-DEC-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch R4940780								
WG3240176-11 DUP								
Chloride (Cl)		L2392812-1 0.52	0.50		mg/L	3.5	20	06-DEC-19
WG3240176-10 LCS								
Chloride (Cl)			101.5		%		90-110	06-DEC-19
WG3240176-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	06-DEC-19
WG3240176-12 MS								
Chloride (Cl)		L2392812-1	97.6		%		75-125	06-DEC-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R4940534								
WG3239947-15 DUP								
Conductivity (@ 25C)		L2392812-3 1060	1070		uS/cm	0.6	10	10-DEC-19
WG3239947-14 LCS								
Conductivity (@ 25C)			97.3		%		90-110	10-DEC-19
WG3239947-13 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	10-DEC-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R4940780								
WG3240176-11 DUP								
Fluoride (F)		L2392812-1 0.300	0.299		mg/L	0.6	20	06-DEC-19
WG3240176-10 LCS								
Fluoride (F)			98.4		%		90-110	06-DEC-19
WG3240176-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	06-DEC-19
WG3240176-12 MS								
Fluoride (F)		L2392812-1	106.3		%		75-125	06-DEC-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
Batch R4936803								
WG3237197-7 DUP								
Mercury (Hg)-Dissolved		L2392812-3 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-DEC-19
WG3237197-6 LCS								



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936803</b>							
<b>WG3237197-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			118.0		%		80-120	06-DEC-19
<b>WG3237197-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	06-DEC-19
<b>WG3237197-8</b>	<b>MS</b>	<b>L2392812-3</b>						
Mercury (Hg)-Dissolved			104.0		%		70-130	06-DEC-19
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936803</b>							
<b>WG3237198-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			116.0		%		80-120	06-DEC-19
<b>WG3237198-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	06-DEC-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936743</b>							
<b>WG3237122-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			108.4		%		80-120	06-DEC-19
Antimony (Sb)-Dissolved			102.8		%		80-120	06-DEC-19
Arsenic (As)-Dissolved			107.2		%		80-120	06-DEC-19
Barium (Ba)-Dissolved			107.2		%		80-120	06-DEC-19
Bismuth (Bi)-Dissolved			99.97		%		80-120	06-DEC-19
Boron (B)-Dissolved			100.8		%		80-120	06-DEC-19
Cadmium (Cd)-Dissolved			108.7		%		80-120	06-DEC-19
Calcium (Ca)-Dissolved			109.7		%		80-120	06-DEC-19
Chromium (Cr)-Dissolved			107.1		%		80-120	06-DEC-19
Cobalt (Co)-Dissolved			105.6		%		80-120	06-DEC-19
Copper (Cu)-Dissolved			104.8		%		80-120	06-DEC-19
Iron (Fe)-Dissolved			110.1		%		80-120	06-DEC-19
Lead (Pb)-Dissolved			108.8		%		80-120	06-DEC-19
Lithium (Li)-Dissolved			112.0		%		80-120	06-DEC-19
Magnesium (Mg)-Dissolved			108.3		%		80-120	06-DEC-19
Manganese (Mn)-Dissolved			100.2		%		80-120	06-DEC-19
Molybdenum (Mo)-Dissolved			104.8		%		80-120	06-DEC-19
Nickel (Ni)-Dissolved			104.8		%		80-120	06-DEC-19
Potassium (K)-Dissolved			109.0		%		80-120	06-DEC-19
Selenium (Se)-Dissolved			101.9		%		80-120	06-DEC-19
Silicon (Si)-Dissolved			108.9		%		60-140	06-DEC-19



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936743</b>							
<b>WG3237122-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silver (Ag)-Dissolved			104.1		%		80-120	06-DEC-19
Sodium (Na)-Dissolved			101.9		%		80-120	06-DEC-19
Strontium (Sr)-Dissolved			107.2		%		80-120	06-DEC-19
Thallium (Tl)-Dissolved			105.9		%		80-120	06-DEC-19
Tin (Sn)-Dissolved			102.2		%		80-120	06-DEC-19
Titanium (Ti)-Dissolved			101.2		%		80-120	06-DEC-19
Uranium (U)-Dissolved			105.4		%		80-120	06-DEC-19
Vanadium (V)-Dissolved			107.9		%		80-120	06-DEC-19
Zinc (Zn)-Dissolved			103.2		%		80-120	06-DEC-19
<b>WG3237122-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.010		mg/L		0.01	06-DEC-19
Antimony (Sb)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Arsenic (As)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Barium (Ba)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Bismuth (Bi)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-19
Boron (B)-Dissolved			<0.10		mg/L		0.1	06-DEC-19
Cadmium (Cd)-Dissolved			<0.000050		mg/L		0.00005	06-DEC-19
Calcium (Ca)-Dissolved			<0.50		mg/L		0.5	06-DEC-19
Chromium (Cr)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Cobalt (Co)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Copper (Cu)-Dissolved			<0.0020		mg/L		0.002	06-DEC-19
Iron (Fe)-Dissolved			<0.10		mg/L		0.1	06-DEC-19
Lead (Pb)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-19
Lithium (Li)-Dissolved			<0.010		mg/L		0.01	06-DEC-19
Magnesium (Mg)-Dissolved			<0.050		mg/L		0.05	06-DEC-19
Manganese (Mn)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Molybdenum (Mo)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-19
Nickel (Ni)-Dissolved			<0.0050		mg/L		0.005	06-DEC-19
Potassium (K)-Dissolved			<0.50		mg/L		0.5	06-DEC-19
Selenium (Se)-Dissolved			<0.00050		mg/L		0.0005	06-DEC-19
Silicon (Si)-Dissolved			<0.50		mg/L		0.5	06-DEC-19
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-19
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	06-DEC-19
Strontium (Sr)-Dissolved			<0.0020		mg/L		0.002	06-DEC-19





## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4936743</b>							
<b>WG3237122-1</b>	<b>MB</b>							
Thallium (Tl)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-19
Tin (Sn)-Dissolved			<0.0010		mg/L		0.001	06-DEC-19
Titanium (Ti)-Dissolved			<0.0030		mg/L		0.003	06-DEC-19
Uranium (U)-Dissolved			<0.00010		mg/L		0.0001	06-DEC-19
Vanadium (V)-Dissolved			<0.0050		mg/L		0.005	06-DEC-19
Zinc (Zn)-Dissolved			<0.010		mg/L		0.01	06-DEC-19
<b>WG3237122-6</b>	<b>MS</b>	<b>L2392812-3</b>						
Aluminum (Al)-Dissolved			112.2		%		70-130	06-DEC-19
Antimony (Sb)-Dissolved			111.3		%		70-130	06-DEC-19
Arsenic (As)-Dissolved			118.8		%		70-130	06-DEC-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	06-DEC-19
Bismuth (Bi)-Dissolved			114.2		%		70-130	06-DEC-19
Boron (B)-Dissolved			102.2		%		70-130	06-DEC-19
Cadmium (Cd)-Dissolved			117.1		%		70-130	06-DEC-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	06-DEC-19
Chromium (Cr)-Dissolved			117.2		%		70-130	06-DEC-19
Cobalt (Co)-Dissolved			117.2		%		70-130	06-DEC-19
Copper (Cu)-Dissolved			116.7		%		70-130	06-DEC-19
Iron (Fe)-Dissolved			116.1		%		70-130	06-DEC-19
Lead (Pb)-Dissolved			118.2		%		70-130	06-DEC-19
Lithium (Li)-Dissolved			118.1		%		70-130	06-DEC-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	06-DEC-19
Manganese (Mn)-Dissolved			111.5		%		70-130	06-DEC-19
Molybdenum (Mo)-Dissolved			110.8		%		70-130	06-DEC-19
Nickel (Ni)-Dissolved			115.4		%		70-130	06-DEC-19
Potassium (K)-Dissolved			114.4		%		70-130	06-DEC-19
Selenium (Se)-Dissolved			122.3		%		70-130	06-DEC-19
Silicon (Si)-Dissolved			104.0		%		70-130	06-DEC-19
Silver (Ag)-Dissolved			115.7		%		70-130	06-DEC-19
Sodium (Na)-Dissolved			114.1		%		70-130	06-DEC-19
Strontium (Sr)-Dissolved			109.5		%		70-130	06-DEC-19
Thallium (Tl)-Dissolved			116.1		%		70-130	06-DEC-19
Tin (Sn)-Dissolved			109.8		%		70-130	06-DEC-19
Titanium (Ti)-Dissolved			113.2		%		70-130	06-DEC-19



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4936743</b>							
<b>WG3237122-6</b>	<b>MS</b>	<b>L2392812-3</b>						
Uranium (U)-Dissolved			115.3		%		70-130	06-DEC-19
Vanadium (V)-Dissolved			117.1		%		70-130	06-DEC-19
Zinc (Zn)-Dissolved			114.5		%		70-130	06-DEC-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4940547</b>							
<b>WG3239972-14</b>	<b>LCS</b>							
Ammonia as N			112.5		%		85-115	10-DEC-19
<b>WG3239972-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	10-DEC-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4940780</b>							
<b>WG3240176-11</b>	<b>DUP</b>	<b>L2392812-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-DEC-19
<b>WG3240176-10</b>	<b>LCS</b>							
Nitrite (as N)			101.1		%		90-110	06-DEC-19
<b>WG3240176-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	06-DEC-19
<b>WG3240176-12</b>	<b>MS</b>	<b>L2392812-1</b>						
Nitrite (as N)			98.9		%		75-125	06-DEC-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4940780</b>							
<b>WG3240176-11</b>	<b>DUP</b>	<b>L2392812-1</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	06-DEC-19
<b>WG3240176-10</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	06-DEC-19
<b>WG3240176-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-DEC-19
<b>WG3240176-12</b>	<b>MS</b>	<b>L2392812-1</b>						
Nitrate (as N)			98.7		%		75-125	06-DEC-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4942213</b>							
<b>WG3241307-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			229		mV		210-230	12-DEC-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4938246							
<b>WG3238345-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			96.7		%		80-120	09-DEC-19
<b>WG3238345-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-DEC-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4940534							
<b>WG3239947-15</b>	<b>DUP</b>	<b>L2392812-3</b>						
pH		7.81	7.79	J	pH	0.02	0.2	10-DEC-19
<b>WG3239947-14</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	10-DEC-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4936913							
<b>WG3237185-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.1		%		80-120	06-DEC-19
<b>WG3237185-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-DEC-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4940780							
<b>WG3240176-11</b>	<b>DUP</b>	<b>L2392812-1</b>						
Sulfate (SO4)		18.2	18.2		mg/L	0.1	20	06-DEC-19
<b>WG3240176-10</b>	<b>LCS</b>							
Sulfate (SO4)			102.0		%		90-110	06-DEC-19
<b>WG3240176-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	06-DEC-19
<b>WG3240176-12</b>	<b>MS</b>	<b>L2392812-1</b>						
Sulfate (SO4)			95.0		%		75-125	06-DEC-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4941993							
<b>WG3240027-17</b>	<b>LCS</b>							
Total Dissolved Solids			102.1		%		85-115	11-DEC-19
<b>WG3240027-16</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	11-DEC-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4940739							
<b>WG3240113-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			116.7		%		75-125	11-DEC-19
<b>WG3240113-14</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4940739</b>							
<b>WG3240113-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			117.0		%		75-125	11-DEC-19
<b>WG3240113-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			113.0		%		75-125	11-DEC-19
<b>WG3240113-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.2		%		75-125	11-DEC-19
<b>WG3240113-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			122.0		%		75-125	11-DEC-19
<b>WG3240113-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-19
<b>WG3240113-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-19
<b>WG3240113-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-19
<b>WG3240113-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-19
<b>WG3240113-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-DEC-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4941868</b>							
<b>WG3238597-12</b>	<b>LCS</b>							
Total Suspended Solids			97.4		%		85-115	10-DEC-19
<b>WG3238597-11</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	10-DEC-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4937261</b>							
<b>WG3237527-8</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	07-DEC-19
<b>WG3237527-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-DEC-19

# Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2392812

Report Date: 20-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	04-DEC-19 10:25	12-DEC-19 16:00	0.25	198	hours	EHTR-FM
	2	04-DEC-19 12:10	12-DEC-19 16:00	0.25	196	hours	EHTR-FM
	3	04-DEC-19 14:05	12-DEC-19 16:00	0.25	194	hours	EHTR-FM
pH	1	04-DEC-19 10:25	10-DEC-19 11:00	0.25	144	hours	EHTR-FM
	2	04-DEC-19 12:10	10-DEC-19 11:00	0.25	143	hours	EHTR-FM
	3	04-DEC-19 14:05	10-DEC-19 11:00	0.25	141	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2392812 were received on 05-DEC-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191204		TURNAROUND TIME: Regular			RUSH:		
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO	
Facility Name / Job# Teck Coal				Lab Name ALS Calgary		Report Format / Distribution	
Project Manager Tom Jeffery				Lab Contact Lyudmyla Shvets		Excel	PDF
Email Tom.Jeffery@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		X	X
Address Suite 1000, 205 - 9th Ave S.E.				Address 2559 29 Street NE		X	X
City Calgary Province AB				City Calgary Province AB		X	X
Postal Code T2G 0R3 Country Canada				Postal Code T1Y 7B5 Country Canada		X	X
Phone Number 250 433-6716				Phone Number 403 407 1794		PO number VPO006320R3	

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2392812-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	PRESERVED		ANALYSIS REQUESTED	
														N	F	N	F
FR_TBSSMW-1-2019-12-04	FR_TBSSMW-1	WG	N	12/4/2019	10:25	G	6	1	1	1	1	1	1	N			
FR_LP-3B-2019-12-04	FR_LP-3B	WG	N	12/4/2019	12:10	G	6	1	1	1	1	1	1	N			
FR_LP-2B-2019-12-04	FR_LP-2B	WG	N	12/4/2019	14:05	G	6	1	1	1	1	1	1	N			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>[Signature]</i>	12/5 9:30

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Tyler Fortin	Mobile #	250-464-5914
Regular (default) X	Sampler's Signature	<i>[Signature]</i>	Date/Time	December 4, 2019

FC



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 10-DEC-19  
Report Date: 17-DEC-19 16:01 (MT)  
Version: FINAL

Client Phone: 250-433-8467

## Certificate of Analysis

Lab Work Order #: L2394416  
Project P.O. #: VPO00597209  
Job Reference: FORDING RVER OPERATIONS  
C of C Numbers: 20191209  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2394416-1	L2394416-2	L2394416-3
		Description	WG	WG	WG
		Sampled Date	09-DEC-19	09-DEC-19	09-DEC-19
		Sampled Time	12:55	12:00	14:05
		Client ID	FR_GCMW-1B-2019-12-09	FR_GCMW-1A-2019-12-09	FR_CB-2A-2019-12-09
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	701	667	829	
	Hardness (as CaCO3) (mg/L)	83.9	42.3	13.8	
	pH (pH)	8.25	8.50	8.78	
	ORP (mV)	239	304	275	
	Total Suspended Solids (mg/L)	6.9	4.5	1.8	
	Total Dissolved Solids (mg/L)	496 <sup>DLHC</sup>	454 <sup>DLHC</sup>	554 <sup>DLHC</sup>	
	Turbidity (NTU)	5.23	5.43	10.5	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	391	333	406	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	15.8	39.6	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	391	349	445 <sup>DLHC</sup>	
	Ammonia as N (mg/L)	0.127	0.299	0.625 <sup>DLHC</sup>	
	Bromide (Br) (mg/L)	0.074	0.076	0.057	
	Chloride (Cl) (mg/L)	11.7	17.3	12.5	
	Fluoride (F) (mg/L)	1.69	2.11	1.74	
	Ion Balance (%)	104	105	99.8	
	Nitrate (as N) (mg/L)	<0.0050	0.197	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	0.0115	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.375	0.534	0.600	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0071	0.0520	0.0164	
	Phosphorus (P)-Total (mg/L)	0.0184	0.0429	0.0219	
	Sulfate (SO4) (mg/L)	5.25	3.45	<0.30	
	Anion Sum (meq/L)	8.33	7.65	9.34	
	Cation Sum (meq/L)	8.66	8.01	9.33	
	Cation - Anion Balance (%)	1.9	2.3	-0.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	9.23	3.14	1.08	
	Total Organic Carbon (mg/L)	8.70	3.17	1.29	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0118	0.0041	0.0069	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00303	0.00200	0.00056	
	Barium (Ba)-Dissolved (mg/L)	0.123	0.120	0.237	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2394416-1 WG 09-DEC-19 12:55 FR_GCMW-1B- 2019-12-09	L2394416-2 WG 09-DEC-19 12:00 FR_GCMW-1A- 2019-12-09	L2394416-3 WG 09-DEC-19 14:05 FR_CB-2A-2019- 12-09	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.063	0.174	0.349	
	Cadmium (Cd)-Dissolved (ug/L)	0.0141	0.0106	<0.0050	
	Calcium (Ca)-Dissolved (mg/L)	22.6	10.2	3.01	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	0.23	<0.10	<0.10	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00027	
	Iron (Fe)-Dissolved (mg/L)	0.360	0.053	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0748	0.244	0.528	
	Magnesium (Mg)-Dissolved (mg/L)	6.66	4.10	1.53	
	Manganese (Mn)-Dissolved (mg/L)	0.298	0.0731	0.00824	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0442	0.0416	0.000221	
	Nickel (Ni)-Dissolved (mg/L)	0.00176	<0.00050	<0.00050	
	Potassium (K)-Dissolved (mg/L)	1.59	1.30	1.04	
	Selenium (Se)-Dissolved (ug/L)	0.182	1.20	<0.050	
	Silicon (Si)-Dissolved (mg/L)	4.20	2.91	3.09	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	159	163	206	
	Strontium (Sr)-Dissolved (mg/L)	0.177	0.144	0.288	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	0.00018	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000645	0.000318	0.000055	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0022	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2394416-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2394416-1, -2, -3
Matrix Spike	Phosphorus (P)-Total	MS-B	L2394416-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			

## Reference Information

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>HG-T-CVAA-CL</b>	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

20191209

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4942127							
<b>WG3241005-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.7		%		85-115	11-DEC-19
<b>WG3241005-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	11-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4942112							
<b>WG3241144-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	11-DEC-19
<b>WG3241144-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-DEC-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
Batch	R4944086							
<b>WG3243695-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			109.2		%		80-120	16-DEC-19
<b>WG3243695-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-10</b>	<b>LCS</b>							
Bromide (Br)			111.9		%		85-115	10-DEC-19
<b>WG3241017-6</b>	<b>LCS</b>							
Bromide (Br)			105.1		%		85-115	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-DEC-19
<b>WG3241017-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4943673							
<b>WG3243095-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.7		%		80-120	14-DEC-19
<b>WG3243095-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4943673							
<b>WG3243095-2</b>	<b>LCS</b>							
Total Organic Carbon			96.0		%		80-120	14-DEC-19
<b>WG3243095-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4943673							
<b>WG3243095-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	14-DEC-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-10 LCS</b>								
Chloride (Cl)			101.5		%		90-110	10-DEC-19
<b>WG3241017-6 LCS</b>								
Chloride (Cl)			102.7		%		90-110	10-DEC-19
<b>WG3241017-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	10-DEC-19
<b>WG3241017-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	10-DEC-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4942112							
<b>WG3241144-2 LCS</b>								
Conductivity (@ 25C)			97.3		%		90-110	11-DEC-19
<b>WG3241144-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-DEC-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-10 LCS</b>								
Fluoride (F)			97.2		%		90-110	10-DEC-19
<b>WG3241017-6 LCS</b>								
Fluoride (F)			100.7		%		90-110	10-DEC-19
<b>WG3241017-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	10-DEC-19
<b>WG3241017-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	10-DEC-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R4944583							
<b>WG3244228-2 LCS</b>								
Mercury (Hg)-Dissolved			110.0		%		80-120	16-DEC-19
<b>WG3244228-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-19
<b>HG-T-CVAA-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944583</b>							
<b>WG3244229-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			111.0		%		80-120	16-DEC-19
<b>WG3244229-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-DEC-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.4		%		80-120	16-DEC-19
Antimony (Sb)-Dissolved			105.8		%		80-120	16-DEC-19
Arsenic (As)-Dissolved			97.9		%		80-120	16-DEC-19
Barium (Ba)-Dissolved			97.7		%		80-120	16-DEC-19
Bismuth (Bi)-Dissolved			103.6		%		80-120	16-DEC-19
Boron (B)-Dissolved			102.3		%		80-120	16-DEC-19
Cadmium (Cd)-Dissolved			97.1		%		80-120	16-DEC-19
Calcium (Ca)-Dissolved			107.4		%		80-120	16-DEC-19
Chromium (Cr)-Dissolved			98.3		%		80-120	16-DEC-19
Cobalt (Co)-Dissolved			97.3		%		80-120	16-DEC-19
Copper (Cu)-Dissolved			96.8		%		80-120	16-DEC-19
Iron (Fe)-Dissolved			102.9		%		80-120	16-DEC-19
Lead (Pb)-Dissolved			108.4		%		80-120	16-DEC-19
Lithium (Li)-Dissolved			109.1		%		80-120	16-DEC-19
Magnesium (Mg)-Dissolved			107.2		%		80-120	16-DEC-19
Manganese (Mn)-Dissolved			98.3		%		80-120	16-DEC-19
Molybdenum (Mo)-Dissolved			108.7		%		80-120	16-DEC-19
Nickel (Ni)-Dissolved			97.6		%		80-120	16-DEC-19
Potassium (K)-Dissolved			98.9		%		80-120	16-DEC-19
Selenium (Se)-Dissolved			97.8		%		80-120	16-DEC-19
Silicon (Si)-Dissolved			101.0		%		60-140	16-DEC-19
Silver (Ag)-Dissolved			108.4		%		80-120	16-DEC-19
Sodium (Na)-Dissolved			100.2		%		80-120	16-DEC-19
Strontium (Sr)-Dissolved			115.3		%		80-120	16-DEC-19
Thallium (Tl)-Dissolved			105.9		%		80-120	16-DEC-19
Tin (Sn)-Dissolved			98.8		%		80-120	16-DEC-19
Titanium (Ti)-Dissolved			87.1		%		80-120	16-DEC-19
Uranium (U)-Dissolved			110.0		%		80-120	16-DEC-19





## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-2</b>	<b>LCS</b>	<b>TMRM</b>						
Vanadium (V)-Dissolved			101.1		%		80-120	16-DEC-19
Zinc (Zn)-Dissolved			96.2		%		80-120	16-DEC-19
<b>WG3243695-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4943991							
<b>WG3242302-22</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	13-DEC-19
<b>WG3242302-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-DEC-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4941622							
<b>WG3241017-10</b>	<b>LCS</b>							
Nitrite (as N)			103.8		%		90-110	10-DEC-19
<b>WG3241017-6</b>	<b>LCS</b>							
Nitrite (as N)			105.2		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-DEC-19
<b>WG3241017-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-DEC-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4941622							
<b>WG3241017-10</b>	<b>LCS</b>							
Nitrate (as N)			103.1		%		90-110	10-DEC-19
<b>WG3241017-6</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-DEC-19
<b>WG3241017-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-DEC-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4944929							
<b>WG3243823-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			229		mV		210-230	16-DEC-19
<b>WG3243823-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	16-DEC-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4943276							
<b>WG3242072-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			94.1		%		80-120	13-DEC-19
<b>WG3242072-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.3		%		80-120	13-DEC-19
<b>WG3242072-17</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R4943276								
<b>WG3242072-17 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-DEC-19
<b>WG3242072-21 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-DEC-19
<b>PH-CL</b>								
<b>Water</b>								
Batch R4942112								
<b>WG3241144-2 LCS</b>								
pH			7.00		pH		6.9-7.1	11-DEC-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch R4942271								
<b>WG3240152-2 LCS</b>								
Orthophosphate-Dissolved (as P)			101.6		%		80-120	11-DEC-19
<b>WG3240152-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch R4941622								
<b>WG3241017-10 LCS</b>								
Sulfate (SO4)			106.3		%		90-110	10-DEC-19
<b>WG3241017-6 LCS</b>								
Sulfate (SO4)			106.7		%		90-110	10-DEC-19
<b>WG3241017-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	10-DEC-19
<b>WG3241017-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	10-DEC-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R4944736								
<b>WG3243209-5 LCS</b>								
Total Dissolved Solids			106.8		%		85-115	16-DEC-19
<b>WG3243209-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	16-DEC-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R4943090								
<b>WG3242367-10 LCS</b>								
Total Kjeldahl Nitrogen			102.0		%		75-125	12-DEC-19
<b>WG3242367-14 LCS</b>								
Total Kjeldahl Nitrogen			102.0		%		75-125	12-DEC-19



## Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4943090</b>							
<b>WG3242367-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	12-DEC-19
<b>WG3242367-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.2		%		75-125	12-DEC-19
<b>WG3242367-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-DEC-19
<b>WG3242367-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-DEC-19
<b>WG3242367-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-DEC-19
<b>WG3242367-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-DEC-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4944001</b>							
<b>WG3243208-4</b>	<b>LCS</b>							
Total Suspended Solids			95.9		%		85-115	16-DEC-19
<b>WG3243208-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	16-DEC-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4941464</b>							
<b>WG3239030-17</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	10-DEC-19
<b>WG3239030-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-DEC-19

# Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2394416

Report Date: 17-DEC-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	09-DEC-19 12:55	16-DEC-19 10:00	0.25	165	hours	EHTR-FM
	2	09-DEC-19 12:00	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
	3	09-DEC-19 14:05	16-DEC-19 10:00	0.25	164	hours	EHTR-FM
pH	1	09-DEC-19 12:55	11-DEC-19 11:00	0.25	46	hours	EHTR-FM
	2	09-DEC-19 12:00	11-DEC-19 11:00	0.25	47	hours	EHTR-FM
	3	09-DEC-19 14:05	11-DEC-19 11:00	0.25	45	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2394416 were received on 10-DEC-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191209      TURNAROUND TIME: Regular      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording Rver Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla Shvets@ALSglobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory_jones@golder.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughhead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250 433-6716			Phone Number	403 407 1794			PO number	VPO00597209			

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOCTKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL				
								N	F	N	F	F	N				
								NONE	H2SO4	H2SO4	HNO3	HCL	HCL				
FR_GCMW-1B-2019-12-09	FR_GCMW-1B	WG	N	12/9/2019	12:55	G	6	1	1	1	1	1	1				
FR_GCMW-1A-2019-12-09	FR_GCMW-1A	WG	N	12/9/2019	12:00	G	6	1	1	1	1	1	1				
FR_CB-2A-2019-12-09	FR_CB-2A	WG	N	12/9/2019	14:05	G	6	1	1	1	1	1	1				

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**      **RELINQUISHED BY/AFFILIATION**      **DATE/TIME**      **ACCEPTED BY/AFFILIATION**      **DATE/TIME**

All samples are field filtered and preserved as required.

A 12/10 988

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default)	X	Tyler Fortin		250-464-5914	December 9, 2019
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 11-DEC-19  
Report Date: 19-DEC-19 14:35 (MT)  
Version: FINAL

Client Phone: 250-433-8467

## Certificate of Analysis

Lab Work Order #: L2394923  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20191210  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2394923-1 WG 10-DEC-19 09:55 FR_CB-1B-2019-12-10	L2394923-2 WG 10-DEC-19 11:50 FR_CB-1A-2019-12-10	L2394923-3 WG 10-DEC-19 14:05 FR_KB-2-2019-12-10	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	594	587	1830	
	Hardness (as CaCO3) (mg/L)	279	274	1140	
	pH (pH)	8.30	8.32	7.76	
	ORP (mV)	475	492	455	
	Total Suspended Solids (mg/L)	3.5	<1.0	31.9	
	Total Dissolved Solids (mg/L)	289 <sup>DLHC</sup>	269 <sup>DLHC</sup>	1450 <sup>DLHC</sup>	
	Turbidity (NTU)	12.2	17.7	67.0	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	23.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	277	271	387	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.0	7.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	282	278	387	
	Ammonia as N (mg/L)	1.04 <sup>DLHC</sup>	0.966 <sup>DLHC</sup>	0.0062 <sup>DLHC</sup>	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.25 <sup>DLHC</sup>	
	Chloride (Cl) (mg/L)	40.8	39.1	<2.5 <sup>DLHC</sup>	
	Fluoride (F) (mg/L)	0.284	0.400	<0.10 <sup>DLHC</sup>	
	Ion Balance (%)	95.0	95.0	101 <sup>DLHC</sup>	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	66.0 <sup>DLHC</sup>	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>	
	Total Kjeldahl Nitrogen (mg/L)	1.12	0.991	0.196 <sup>TKNI</sup>	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010	0.0012	0.0028	
	Phosphorus (P)-Total (mg/L)	0.0062	0.0108	0.0727 <sup>DLHC</sup>	
	Sulfate (SO4) (mg/L)	<0.30	<0.30	503	
	Anion Sum (meq/L)	6.80	6.67	22.9	
	Cation Sum (meq/L)	6.46	6.34	23.0	
	Cation - Anion Balance (%)	-2.5	-2.6	0.3	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.38	2.45	1.39
Total Organic Carbon (mg/L)		2.25	2.10	1.34	
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	<0.0000050	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0011	<0.0010	0.0057 <sup>DLDS</sup>	
	Antimony (Sb)-Dissolved (mg/L)	0.00011	<0.00010	<0.00050 <sup>DLDS</sup>	
	Arsenic (As)-Dissolved (mg/L)	0.00102	0.00020	<0.00050 <sup>DLDS</sup>	
	Barium (Ba)-Dissolved (mg/L)	4.16 <sup>DLHC</sup>	4.41 <sup>DLHC</sup>	0.0660 <sup>DLDS</sup>	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.10 <sup>DLDS</sup>	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2394923-1	L2394923-2	L2394923-3
		Description	WG	WG	WG
		Sampled Date	10-DEC-19	10-DEC-19	10-DEC-19
		Sampled Time	09:55	11:50	14:05
		Client ID	FR_CB-1B-2019-12-10	FR_CB-1A-2019-12-10	FR_KB-2-2019-12-10
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	
	Boron (B)-Dissolved (mg/L)	0.028	0.028	<0.050 <sup>DLDS</sup>	
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.121 <sup>DLDS</sup>	
	Calcium (Ca)-Dissolved (mg/L)	64.1	63.4	252 <sup>DLDS</sup>	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.50 <sup>DLDS</sup>	
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.0010 <sup>DLDS</sup>	
	Iron (Fe)-Dissolved (mg/L)	1.18	1.50	<0.050 <sup>DLDS</sup>	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	
	Lithium (Li)-Dissolved (mg/L)	0.122	0.117	0.0729 <sup>DLDS</sup>	
	Magnesium (Mg)-Dissolved (mg/L)	28.8	28.1	124 <sup>DLDS</sup>	
	Manganese (Mn)-Dissolved (mg/L)	0.0262	0.0185	0.00058 <sup>DLDS</sup>	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00187	0.00178	0.00136 <sup>DLDS</sup>	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	
	Potassium (K)-Dissolved (mg/L)	3.41	3.22	3.92 <sup>DLDS</sup>	
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	192 <sup>DLDS</sup>	
	Silicon (Si)-Dissolved (mg/L)	3.21	3.34	2.13 <sup>DLDS</sup>	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	
	Sodium (Na)-Dissolved (mg/L)	15.4	14.5	3.40 <sup>DLDS</sup>	
	Strontium (Sr)-Dissolved (mg/L)	0.888	0.905	0.252 <sup>DLDS</sup>	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010 <sup>DLDS</sup>	
	Uranium (U)-Dissolved (mg/L)	0.000148	0.000024	0.00926 <sup>DLDS</sup>	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	
	Zinc (Zn)-Dissolved (mg/L)	0.0038	0.0020	<0.0050 <sup>DLDS</sup>	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	MB-LOR	L2394923-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2394923-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2394923-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2394923-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2394923-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2394923-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**HG-T-CVAA-CL** Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

**Chain of Custody Numbers:**

20191210

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 1 of 9

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944069</b>							
<b>WG3243534-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.2		%		85-115	14-DEC-19
<b>WG3243534-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	14-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.4		%		85-115	13-DEC-19
<b>WG3242622-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.4	MB-LOR	mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.9		%		80-120	16-DEC-19
<b>WG3243695-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-6</b>	<b>LCS</b>							
Bromide (Br)			99.0		%		85-115	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945261</b>							
<b>WG3244196-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.4		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945261</b>							
<b>WG3244196-2</b>	<b>LCS</b>							
Total Organic Carbon			106.0		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4945395							
<b>WG3245305-6</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-DEC-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	13-DEC-19
<b>WG3242622-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4945395							
<b>WG3245305-6</b>	<b>LCS</b>							
Fluoride (F)			100.5		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-DEC-19
<b>HG-D-CVAA-CL</b>	<b>Water</b>							
Batch	R4944583							
<b>WG3244228-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			110.0		%		80-120	16-DEC-19
<b>WG3244228-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			114.0		%		80-120	16-DEC-19
<b>WG3244228-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-19
<b>WG3244228-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-19
<b>HG-T-CVAA-CL</b>	<b>Water</b>							
Batch	R4944583							
<b>WG3244229-6</b>	<b>LCS</b>							
Mercury (Hg)-Total			116.0		%		80-120	16-DEC-19
<b>WG3244229-5</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-DEC-19
<b>MET-D-CCMS-CL</b>	<b>Water</b>							
Batch	R4944086							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.5		%		80-120	16-DEC-19
Antimony (Sb)-Dissolved			99.1		%		80-120	16-DEC-19



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Arsenic (As)-Dissolved			103.6		%		80-120	16-DEC-19
Barium (Ba)-Dissolved			101.6		%		80-120	16-DEC-19
Bismuth (Bi)-Dissolved			97.9		%		80-120	16-DEC-19
Boron (B)-Dissolved			93.4		%		80-120	16-DEC-19
Cadmium (Cd)-Dissolved			103.0		%		80-120	16-DEC-19
Calcium (Ca)-Dissolved			100.8		%		80-120	16-DEC-19
Chromium (Cr)-Dissolved			102.2		%		80-120	16-DEC-19
Cobalt (Co)-Dissolved			102.4		%		80-120	16-DEC-19
Copper (Cu)-Dissolved			102.4		%		80-120	16-DEC-19
Iron (Fe)-Dissolved			103.3		%		80-120	16-DEC-19
Lead (Pb)-Dissolved			99.9		%		80-120	16-DEC-19
Lithium (Li)-Dissolved			96.3		%		80-120	16-DEC-19
Magnesium (Mg)-Dissolved			107.2		%		80-120	16-DEC-19
Manganese (Mn)-Dissolved			104.3		%		80-120	16-DEC-19
Molybdenum (Mo)-Dissolved			104.3		%		80-120	16-DEC-19
Nickel (Ni)-Dissolved			106.1		%		80-120	16-DEC-19
Potassium (K)-Dissolved			102.1		%		80-120	16-DEC-19
Selenium (Se)-Dissolved			99.4		%		80-120	16-DEC-19
Silicon (Si)-Dissolved			104.7		%		60-140	16-DEC-19
Silver (Ag)-Dissolved			103.6		%		80-120	16-DEC-19
Sodium (Na)-Dissolved			102.7		%		80-120	16-DEC-19
Strontium (Sr)-Dissolved			106.3		%		80-120	16-DEC-19
Thallium (Tl)-Dissolved			98.7		%		80-120	16-DEC-19
Tin (Sn)-Dissolved			102.5		%		80-120	16-DEC-19
Titanium (Ti)-Dissolved			99.5		%		80-120	16-DEC-19
Uranium (U)-Dissolved			101.3		%		80-120	16-DEC-19
Vanadium (V)-Dissolved			104.1		%		80-120	16-DEC-19
Zinc (Zn)-Dissolved			100.1		%		80-120	16-DEC-19
<b>WG3243695-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19





## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-5</b>	<b>MB</b>							
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944014</b>							
<b>WG3243496-14</b>	<b>LCS</b>							
Ammonia as N			94.5		%		85-115	18-DEC-19
<b>WG3243496-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-19
<b>WG3243496-16</b>	<b>MS</b>	<b>L2394923-3</b>						
Ammonia as N			98.5		%		75-125	18-DEC-19



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4945532							
<b>WG3244711-18</b>	<b>LCS</b>							
Ammonia as N			100.2		%		85-115	17-DEC-19
<b>WG3244711-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-DEC-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4945395							
<b>WG3245305-6</b>	<b>LCS</b>							
Nitrite (as N)			102.0		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4945395							
<b>WG3245305-6</b>	<b>LCS</b>							
Nitrate (as N)			101.1		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4944929							
<b>WG3243823-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	16-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4943778							
<b>WG3242931-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.5		%		80-120	15-DEC-19
<b>WG3242931-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4942271							
<b>WG3240152-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			108.3		%		80-120	11-DEC-19
<b>WG3240152-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4942271							
<b>WG3240152-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4945395							
<b>WG3245305-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.5		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4945535							
<b>WG3244216-8</b>	<b>LCS</b>							
Total Dissolved Solids			94.6		%		85-115	17-DEC-19
<b>WG3244216-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-DEC-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4944841							
<b>WG3244543-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.5		%		75-125	17-DEC-19
<b>WG3244543-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	17-DEC-19
<b>WG3244543-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
<b>WG3244543-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
<b>WG3244543-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>WG3244543-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>WG3244543-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>WG3244543-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4945477							
<b>WG3244219-4</b>	<b>LCS</b>							
Total Suspended Solids			108.9		%		85-115	17-DEC-19
<b>WG3244219-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945477</b>							
<b>WG3244219-6</b>	<b>LCS</b>							
Total Suspended Solids			96.3		%		85-115	17-DEC-19
<b>WG3244219-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-DEC-19
<b>WG3244219-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-DEC-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942279</b>							
<b>WG3241383-9</b>	<b>DUP</b>	<b>L2394923-1</b>						
Turbidity		12.2	12.2		NTU	0.0	15	12-DEC-19
<b>WG3241383-5</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	12-DEC-19
<b>WG3241383-8</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	12-DEC-19
<b>WG3241383-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-DEC-19
<b>WG3241383-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-DEC-19

# Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

---

# Quality Control Report

Workorder: L2394923

Report Date: 19-DEC-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	10-DEC-19 09:55	16-DEC-19 10:00	0.25	144	hours	EHTR-FM
	2	10-DEC-19 11:50	16-DEC-19 10:00	0.25	142	hours	EHTR-FM
	3	10-DEC-19 14:05	16-DEC-19 10:00	0.25	140	hours	EHTR-FM
pH	1	10-DEC-19 09:55	13-DEC-19 11:30	0.25	74	hours	EHTR-FM
	2	10-DEC-19 11:50	13-DEC-19 11:30	0.25	72	hours	EHTR-FM
	3	10-DEC-19 14:05	13-DEC-19 11:30	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2394923 were received on 11-DEC-19 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191210      TURNAROUND TIME: Regular      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Fording Rver Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Tom Jeffery			Lab Contact	Lyudmyla Shvets			Email 1:	tom.jeffery@teck.com	X	X	X
Email	Tom.Jeffery@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Address	Suite 1000, 205 - 9th Ave S.E.			Address	2559 29 Street NE			Email 3:	gregory.jones@golder.com	X	X	X
City	Calgary	Province	AB	City	Calgary	Province	AB	Email 4:	Scott.Roughead@teck.com	X	X	X
Postal Code	T2G 0R3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250 433-6716			Phone Number	403 407 1794			PO number	VPO00597209			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PH	N	F	N	F	F	N	N	N	N	N	N	N
								TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL							
FR_CB-1B-2019-12-10	FR_CB-1B	WG	N	12/10/2019	9:55	G	6	1	1	1	1	1	1	1						
FR_CB-1A-2019-12-10	FR_CB-1A	WG	N	12/10/2019	11:50	G	6	1	1	1	1	1	1	1						
FR_KB-2-2019-12-10	FR_KB-2	WG	N	12/10/2019	14:05	G	6	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
All samples are field filtered and preserved as required.			<i>Dle</i>	12/11 0840

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin		Mobile #	250-464-5914
Sampler's Signature	<i>[Signature]</i>		Date/Time	December 10, 2019

19C



TECK COAL LIMITED (FORDING RIVER)  
ATTN: Tom Jeffery  
PO BOX 100  
ELKFORD BC VOB 1H0

Date Received: 12-DEC-19  
Report Date: 19-DEC-19 16:27 (MT)  
Version: FINAL

Client Phone: 250-433-8467

## Certificate of Analysis

Lab Work Order #: L2395505  
Project P.O. #: VPO00597209  
Job Reference: FORDING RIVER OPERATIONS  
C of C Numbers: 20191211  
Legal Site Desc:

Justine Buma-a  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2395505-1 WG 11-DEC-19 10:30 FR_KB-3B-2019-12-11	L2395505-2 WG 11-DEC-19 10:35 FR_DC4-2019-12-11	L2395505-3 WG 11-DEC-19 10:40 FR_FLD4-2019-12-11	L2395505-4 WG 11-DEC-19 12:30 FR_KB-3A-2019-12-11	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1600	1590	<2.0	1730
	Hardness (as CaCO3) (mg/L)	1030	1000	<0.50	1090
	pH (pH)	7.78	7.79	5.45	7.83
	ORP (mV)	331	442	500	324
	Total Suspended Solids (mg/L)	2.8	2.3	<1.0	2.5
	Total Dissolved Solids (mg/L)	1280 <sup>DLHC</sup>	1300 <sup>DLHC</sup>	<10	1390 <sup>DLHC</sup>
	Turbidity (NTU)	1.82	1.57	<0.10	0.62
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	16.6	16.7	1.1	17.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	316	317	<5.0	335
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<5.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<5.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	316	317	<5.0 <sup>DLB</sup>	335
	Ammonia as N (mg/L)	0.0075	0.0057	<0.0050	0.0107
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	<0.050	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	<2.5 <sup>DLHC</sup>	<2.5 <sup>DLHC</sup>	<0.50	<2.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	<0.10 <sup>DLHC</sup>	<0.10 <sup>DLHC</sup>	<0.020	<0.10 <sup>DLHC</sup>
	Ion Balance (%)	109	106	0.0	104
	Nitrate (as N) (mg/L)	54.5 <sup>DLHC</sup>	54.2 <sup>DLHC</sup>	<0.0050 <sup>HTD</sup>	58.6 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010	0.0145 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>	<0.050 <sup>TKNI</sup>	<0.050	<0.050 <sup>TKNI</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0012	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0028	0.0024	<0.0020	0.0026
	Sulfate (SO4) (mg/L)	426 <sup>DLHC</sup>	430 <sup>DLHC</sup>	<0.30	493 <sup>DLHC</sup>
	Anion Sum (meq/L)	19.1	19.1	<0.10	21.1
	Cation Sum (meq/L)	20.8	20.2	<0.10	22.0
	Cation - Anion Balance (%)	4.3	2.7	0.0	2.1
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.23 <sup>DTC</sup>	2.42 <sup>DTC</sup>	<0.50	2.11 <sup>DTC</sup>
	Total Organic Carbon (mg/L)	0.94 <sup>DTC</sup>	1.03 <sup>DTC</sup>	<0.50	0.77 <sup>DTC</sup>
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00012	0.00013	<0.00010	0.00015
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0603	0.0604	<0.00010	0.0552
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2395505-1	L2395505-2	L2395505-3	L2395505-4
		Description	WG	WG	WG	WG
		Sampled Date	11-DEC-19	11-DEC-19	11-DEC-19	11-DEC-19
		Sampled Time	10:30	10:35	10:40	12:30
		Client ID	FR_KB-3B-2019-12-11	FR_DC4-2019-12-11	FR_FLD4-2019-12-11	FR_KB-3A-2019-12-11
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.021	0.021	<0.010	0.018
	Cadmium (Cd)-Dissolved (ug/L)		0.0231	0.0265	<0.0050	0.0210
	Calcium (Ca)-Dissolved (mg/L)		253	242	<0.050	276
	Chromium (Cr)-Dissolved (mg/L)		0.00013	0.00012	<0.00010	0.00013
	Cobalt (Co)-Dissolved (ug/L)		0.22	0.23	<0.10	2.08
	Copper (Cu)-Dissolved (mg/L)		0.00045	0.00040	<0.00020	0.00067
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0590	0.0563	<0.0010	0.0396
	Magnesium (Mg)-Dissolved (mg/L)		96.8	96.6	<0.10	97.8
	Manganese (Mn)-Dissolved (mg/L)		0.00073	0.00071	<0.00010	0.00120
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000522	0.000527	<0.000050	0.000367
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	0.00077
	Potassium (K)-Dissolved (mg/L)		2.73	2.73	<0.050	1.97
	Selenium (Se)-Dissolved (ug/L)		191	184	<0.050	194
	Silicon (Si)-Dissolved (mg/L)		2.65	2.64	<0.050	3.16
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.09	3.09	<0.050	3.62
	Strontium (Sr)-Dissolved (mg/L)		0.239	0.238	<0.00020	0.306
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00035
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00673	0.00672	<0.000010	0.00534
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0026	0.0024	<0.0010	0.0048

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	MB-LOR	L2395505-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2395505-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2395505-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191211

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 1 of 11

Client: TECK COAL LIMITED (FORDING RIVER)  
 PO BOX 100  
 ELKFORD BC V0B 1H0

Contact: Tom Jeffery

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942964</b>							
<b>WG3242015-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.0		%		85-115	12-DEC-19
<b>WG3242015-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	12-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.9		%		85-115	13-DEC-19
<b>WG3242622-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.3	MB-LOR	mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.1		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943241</b>							
<b>WG3242561-6</b>	<b>LCS</b>							
Bromide (Br)			110.4		%		85-115	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4946088</b>							
<b>WG3246144-3</b>	<b>DUP</b>	<b>L2395505-4</b>						
Dissolved Organic Carbon		2.11	1.41	J	mg/L	0.70	1	18-DEC-19
<b>WG3246144-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.5		%		80-120	18-DEC-19
<b>WG3246144-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-DEC-19
<b>WG3246144-4</b>	<b>MS</b>	<b>L2395505-4</b>						
Dissolved Organic Carbon			84.2		%		70-130	18-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4946088</b>							
<b>WG3246144-3</b>	<b>DUP</b>	<b>L2395505-4</b>						
Total Organic Carbon		0.77	<0.50	RPD-NA	mg/L	N/A	20	18-DEC-19
<b>WG3246144-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4946088</b>							
<b>WG3246144-2</b>	<b>LCS</b>							
Total Organic Carbon			97.5		%		80-120	18-DEC-19
<b>WG3246144-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-DEC-19
<b>WG3246144-4</b>	<b>MS</b>	<b>L2395505-4</b>						
Total Organic Carbon			85.5		%		70-130	18-DEC-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4943241</b>							
<b>WG3242561-6</b>	<b>LCS</b>							
Chloride (Cl)			103.5		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-DEC-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.8		%		90-110	13-DEC-19
<b>WG3242622-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4943241</b>							
<b>WG3242561-6</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-DEC-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945206</b>							
<b>WG3244753-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.8		%		80-120	18-DEC-19
<b>WG3244753-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-DEC-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945206</b>							
<b>WG3244994-3</b>	<b>DUP</b>	<b>L2395505-4</b>						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	18-DEC-19
<b>WG3244994-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			106.4		%		80-120	18-DEC-19
<b>WG3244994-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4945206</b>							
<b>WG3244994-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	18-DEC-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	17-DEC-19
Antimony (Sb)-Dissolved			103.9		%		80-120	17-DEC-19
Arsenic (As)-Dissolved			98.5		%		80-120	17-DEC-19
Barium (Ba)-Dissolved			102.2		%		80-120	17-DEC-19
Bismuth (Bi)-Dissolved			104.9		%		80-120	17-DEC-19
Boron (B)-Dissolved			105.8		%		80-120	17-DEC-19
Cadmium (Cd)-Dissolved			96.8		%		80-120	17-DEC-19
Calcium (Ca)-Dissolved			107.2		%		80-120	17-DEC-19
Chromium (Cr)-Dissolved			100.8		%		80-120	17-DEC-19
Cobalt (Co)-Dissolved			98.4		%		80-120	17-DEC-19
Copper (Cu)-Dissolved			95.1		%		80-120	17-DEC-19
Iron (Fe)-Dissolved			97.5		%		80-120	17-DEC-19
Lead (Pb)-Dissolved			99.9		%		80-120	17-DEC-19
Lithium (Li)-Dissolved			105.8		%		80-120	17-DEC-19
Magnesium (Mg)-Dissolved			96.3		%		80-120	17-DEC-19
Manganese (Mn)-Dissolved			96.4		%		80-120	17-DEC-19
Molybdenum (Mo)-Dissolved			103.6		%		80-120	17-DEC-19
Nickel (Ni)-Dissolved			96.6		%		80-120	17-DEC-19
Potassium (K)-Dissolved			102.7		%		80-120	17-DEC-19
Selenium (Se)-Dissolved			98.8		%		80-120	17-DEC-19
Silicon (Si)-Dissolved			114.0		%		60-140	17-DEC-19
Silver (Ag)-Dissolved			103.3		%		80-120	17-DEC-19
Sodium (Na)-Dissolved			98.6		%		80-120	17-DEC-19
Strontium (Sr)-Dissolved			105.3		%		80-120	17-DEC-19
Thallium (Tl)-Dissolved			103.1		%		80-120	17-DEC-19
Tin (Sn)-Dissolved			93.6		%		80-120	17-DEC-19
Titanium (Ti)-Dissolved			95.5		%		80-120	17-DEC-19
Uranium (U)-Dissolved			101.1		%		80-120	17-DEC-19
Vanadium (V)-Dissolved			101.8		%		80-120	17-DEC-19





## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			90.0		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.7		%		80-120	18-DEC-19
Antimony (Sb)-Dissolved			105.8		%		80-120	18-DEC-19
Arsenic (As)-Dissolved			112.0		%		80-120	18-DEC-19
Barium (Ba)-Dissolved			111.8		%		80-120	18-DEC-19
Bismuth (Bi)-Dissolved			106.6		%		80-120	18-DEC-19
Boron (B)-Dissolved			108.1		%		80-120	18-DEC-19
Cadmium (Cd)-Dissolved			107.8		%		80-120	18-DEC-19
Calcium (Ca)-Dissolved			109.1		%		80-120	18-DEC-19
Chromium (Cr)-Dissolved			112.1		%		80-120	18-DEC-19
Cobalt (Co)-Dissolved			109.6		%		80-120	18-DEC-19
Copper (Cu)-Dissolved			108.8		%		80-120	18-DEC-19
Iron (Fe)-Dissolved			118.7		%		80-120	18-DEC-19
Lead (Pb)-Dissolved			106.1		%		80-120	18-DEC-19
Lithium (Li)-Dissolved			108.6		%		80-120	18-DEC-19
Magnesium (Mg)-Dissolved			114.1		%		80-120	18-DEC-19
Manganese (Mn)-Dissolved			110.0		%		80-120	18-DEC-19
Molybdenum (Mo)-Dissolved			111.5		%		80-120	18-DEC-19
Nickel (Ni)-Dissolved			109.8		%		80-120	18-DEC-19
Potassium (K)-Dissolved			114.5		%		80-120	18-DEC-19
Selenium (Se)-Dissolved			110.4		%		80-120	18-DEC-19
Silicon (Si)-Dissolved			109.8		%		60-140	18-DEC-19
Silver (Ag)-Dissolved			109.9		%		80-120	18-DEC-19
Sodium (Na)-Dissolved			112.0		%		80-120	18-DEC-19
Strontium (Sr)-Dissolved			116.6		%		80-120	18-DEC-19
Thallium (Tl)-Dissolved			107.4		%		80-120	18-DEC-19
Tin (Sn)-Dissolved			106.0		%		80-120	18-DEC-19
Titanium (Ti)-Dissolved			113.6		%		80-120	18-DEC-19
Uranium (U)-Dissolved			113.6		%		80-120	18-DEC-19
Vanadium (V)-Dissolved			112.0		%		80-120	18-DEC-19
Zinc (Zn)-Dissolved			104.2		%		80-120	18-DEC-19
<b>WG3245038-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4946158</b>							
<b>WG3245714-6</b>	<b>LCS</b>							
Ammonia as N			94.5		%		85-115	18-DEC-19
<b>WG3245714-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Nitrite (as N)			105.0		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-DEC-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-DEC-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4945784							
<b>WG3245474-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	18-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4945457							
<b>WG3245389-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.1		%		80-120	18-DEC-19
<b>WG3245389-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4943502							
<b>WG3242568-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	14-DEC-19
<b>WG3242568-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-DEC-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.4		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-DEC-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4946301							
<b>WG3245184-2 LCS</b>								
Total Dissolved Solids			96.9		%		85-115	18-DEC-19
<b>WG3245184-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	18-DEC-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4945548							
<b>WG3245455-10 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	19-DEC-19
<b>WG3245455-14 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	19-DEC-19
<b>WG3245455-18 LCS</b>								
Total Kjeldahl Nitrogen			88.4		%		75-125	19-DEC-19
<b>WG3245455-2 LCS</b>								
Total Kjeldahl Nitrogen			92.6		%		75-125	18-DEC-19
<b>WG3245455-6 LCS</b>								
Total Kjeldahl Nitrogen			90.7		%		75-125	19-DEC-19
<b>WG3245455-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-DEC-19
<b>WG3245455-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4946254							
<b>WG3245182-2 LCS</b>								
Total Suspended Solids			101.9		%		85-115	18-DEC-19
<b>WG3245182-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	18-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4942279</b>							
<b>WG3241383-11</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	12-DEC-19
<b>WG3241383-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	12-DEC-19

# Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2395505

Report Date: 19-DEC-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	11-DEC-19 10:30	18-DEC-19 10:00	0.25	168	hours	EHTR-FM
	2	11-DEC-19 10:35	18-DEC-19 10:00	0.25	168	hours	EHTR-FM
	3	11-DEC-19 10:40	18-DEC-19 10:00	0.25	167	hours	EHTR-FM
	4	11-DEC-19 12:30	18-DEC-19 10:00	0.25	166	hours	EHTR-FM
pH	1	11-DEC-19 10:30	13-DEC-19 11:30	0.25	49	hours	EHTR-FM
	2	11-DEC-19 10:35	13-DEC-19 11:30	0.25	49	hours	EHTR-FM
	3	11-DEC-19 10:40	13-DEC-19 11:30	0.25	49	hours	EHTR-FM
	4	11-DEC-19 12:30	13-DEC-19 11:30	0.25	47	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2395505 were received on 12-DEC-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID:	20191211	TURNAROUND TIME:	Regular	RUSH:
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>
Facility Name / Job#	Fording Rver Operations	Lab Name	ALS Calgary	Report Format / Distribution
Project Manager	Tom Jeffery	Lab Contact	Lyudmyla Shvets	Excel
Email	Tom.Jeffery@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com	PDF
Address	Suite 1000, 205 - 9th Ave S.E.	Address	2559 29 Street NE	EDD
City	Calgary	City	Calgary	
Province	AB	Province	AB	
Postal Code	T2G 0R3	Postal Code	T1Y 7B5	
Country	Canada	Country	Canada	
Phone Number	250 433-6716	Phone Number	403 407 1794	PO number
				VPO00597209

**SAMPLE DETAILS** **ANALYSIS REQUESTED**



L2395505-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.	ANALYSIS REQUESTED										
									TECK COAL ROUTINE - CL	TECK COAL DOC	TECK COAL TOC/TKN	TECKCOAL-MET-D-CL	HG-D-CVAF-CL	HG-T-CVAF-CL	N	F	F	N	
FR_KB-3B-2019-12-11	FR_KB-3B	WG	N	12/11/2019	10:30	G	6	NONE	H2SO4	H2SO4		HNO3	HCL		HCL				
FR_DC4-2019-12-11	FR_DC4	WG	N	12/11/2019	10:35	G	6												
FR_FLD4-2019-12-11	FR_FLD4	WG	N	12/11/2019	10:40	G	6												
FR_KB-3A-2019-12-11	FR_KB-3A	WG	N	12/11/2019	12:30	G	6												

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
All samples are field filtered and preserved as required.			<i>DK</i>	12/11
				<i>0650</i>

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Tyler Fortin		Mobile #	250-464-5914
Sampler's Signature	<i>TK</i>		Date/Time	December 11, 2019

30C



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 16-JAN-19  
Report Date: 12-NOV-19 15:38 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-3048

## Certificate of Analysis

**Lab Work Order #:** L2221252  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_Q1\_GW  
Legal Site Desc:

**Comments:** ADDITIONAL 07-NOV-19 11:09

12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-1 GH_GHER3_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 09:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	355		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	0.98		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.201		0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	0.90		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454454
Dissolved Metals Filtration Location	LAB					17-JAN-19	R4453692
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					17-JAN-19	R4453692
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454454
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Barium (Ba)-Dissolved	0.0576		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Boron (B)-Dissolved	0.014		0.010	mg/L	17-JAN-19	18-JAN-19	R4454454
Cadmium (Cd)-Dissolved	0.0463		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454454
Calcium (Ca)-Dissolved	181		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-JAN-19	18-JAN-19	R4454454
Copper (Cu)-Dissolved	0.00098		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454454
Lead (Pb)-Dissolved	0.000120		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Lithium (Li)-Dissolved	0.0110		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454454
Magnesium (Mg)-Dissolved	94.8		0.10	mg/L	17-JAN-19	18-JAN-19	R4454454
Manganese (Mn)-Dissolved	0.00157		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Molybdenum (Mo)-Dissolved	0.000890		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Nickel (Ni)-Dissolved	0.00070		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Potassium (K)-Dissolved	1.54		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454
Selenium (Se)-Dissolved	41.9		0.050	ug/L	17-JAN-19	18-JAN-19	R4454454
Silicon (Si)-Dissolved	4.10		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Sodium (Na)-Dissolved	6.63		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454
Strontium (Sr)-Dissolved	0.339		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454454
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454454
Uranium (U)-Dissolved	0.00340		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454454
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	842		0.50	mg/L		18-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-1 GH_GHER3_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 09:50							
Matrix: WG							
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00011		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0652		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.016		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0550		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	195		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	<0.10		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	0.00127		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	0.011		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	0.000287		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0120		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	99.7		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.00154		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.000917		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.00076		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.53		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	35.6		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.42		0.10	mg/L		17-JAN-19	R4453267
Silver (Ag)-Total	<0.000020	DLB	0.000020	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	6.86		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.351		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.00377		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13.1		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	291		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	291		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0304		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	20.0	DLHC	2.5	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1360		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.16	DLHC	0.10	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b>							
Ion Balance	99.9		-100	%		22-JAN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-1 GH_GHER3_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 09:50 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.1			%		22-JAN-19	
Anion Sum	17.2			meq/L		22-JAN-19	
Cation Sum	17.2			meq/L		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.55	DLHC	0.025	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b>							
ORP	259		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	513	DLHC	1.5	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1100	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.6		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							
Turbidity	0.36		0.10	NTU		17-JAN-19	R4454007
<b>pH</b>							
pH	8.09		0.10	pH		21-JAN-19	R4461567
L2221252-2 GH_GHLRP3_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 09:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	<0.50		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.089		0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	<0.50		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454454
Dissolved Metals Filtration Location	LAB					17-JAN-19	R4453692
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	0.0000053		0.0000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					17-JAN-19	R4453692
Dissolved Metals Filtration Location	LAB					18-JAN-19	R4455788
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454454
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Boron (B)-Dissolved	0.023	RRV	0.010	mg/L	18-JAN-19	18-JAN-19	R4456288
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454454
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-2 GH_GHLRP3_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 09:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-JAN-19	18-JAN-19	R4454454
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454454
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454454
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	17-JAN-19	18-JAN-19	R4454454
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454454
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Potassium (K)-Dissolved	<0.050		0.050	mg/L	17-JAN-19	18-JAN-19	R4454454
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-JAN-19	18-JAN-19	R4454454
Silicon (Si)-Dissolved	1.04	RRV	0.050	mg/L	18-JAN-19	18-JAN-19	R4456288
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	18-JAN-19	18-JAN-19	R4456288
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454454
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454454
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454454
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454454
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454454
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454454
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		19-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.025	RRV	0.010	mg/L		18-JAN-19	R4454454
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	<0.050		0.050	mg/L		18-JAN-19	R4454454
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	<0.10		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	<0.0010		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	<0.10		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	<0.050		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	<0.050		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	1.11	RRV	0.10	mg/L		18-JAN-19	R4454454
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-2 GH_GHLRP3_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 09:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Total	<0.050		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0233		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		22-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		22-JAN-19	
Anion Sum	<0.10			meq/L		22-JAN-19	
Cation Sum	<0.10			meq/L		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b>							
ORP	331		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		17-JAN-19	R4454007
<b>pH</b>							
pH	5.57		0.10	pH		21-JAN-19	R4461567

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-2 GH_GHLRP3_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 09:50 Matrix: WG							
L2221252-3 GH_POTW06_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 09:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	351		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	0.99		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.107	TKNI	0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	0.95		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454807
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454807
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Barium (Ba)-Dissolved	0.0537		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Boron (B)-Dissolved	0.013		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cadmium (Cd)-Dissolved	0.0464		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454807
Calcium (Ca)-Dissolved	167		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-JAN-19	18-JAN-19	R4454807
Copper (Cu)-Dissolved	0.00144		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Lead (Pb)-Dissolved	0.000448		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Lithium (Li)-Dissolved	0.0099		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
Magnesium (Mg)-Dissolved	87.7		0.10	mg/L	17-JAN-19	18-JAN-19	R4454807
Manganese (Mn)-Dissolved	0.00161		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Molybdenum (Mo)-Dissolved	0.000781		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Nickel (Ni)-Dissolved	0.00082		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Potassium (K)-Dissolved	1.45		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Selenium (Se)-Dissolved	34.2		0.050	ug/L	17-JAN-19	18-JAN-19	R4454807
Silicon (Si)-Dissolved	4.00		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Sodium (Na)-Dissolved	6.37		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Strontium (Sr)-Dissolved	0.306		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454807
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Uranium (U)-Dissolved	0.00350		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Zinc (Zn)-Dissolved	0.0037		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	779		0.50	mg/L		18-JAN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-3 GH_POTW06_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 09:50							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00012		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0612		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.016		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0537		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	193		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	<0.10		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	0.00341		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	0.000505		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0122		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	101		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.00161		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.000918		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.00089		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.54		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	35.2		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.44		0.10	mg/L		17-JAN-19	R4453267
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	6.79		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.344		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	0.00011		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.00369		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	0.0046		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	14.8		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	287		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	287		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0211		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.9	DLHC	2.5	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1360		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.16	DLHC	0.10	mg/L		16-JAN-19	R4451833

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-3 GH_POTW06_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 09:50 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.5			%		22-JAN-19	
Anion Sum	17.0			meq/L		22-JAN-19	
Cation Sum	15.9			meq/L		22-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	93.2		-100	%		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.54	DLHC	0.025	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0021		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b>							
ORP	266		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	510	DLHC	1.5	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1100	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							
Turbidity	0.21		0.10	NTU		17-JAN-19	R4454007
<b>pH</b>							
pH	8.08		0.10	pH		21-JAN-19	R4461567
L2221252-4 GH_POTW09_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 11:20 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	303		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	0.63		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.168		0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	0.61		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454807
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454807
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Arsenic (As)-Dissolved	0.00044		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Barium (Ba)-Dissolved	0.0327		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Boron (B)-Dissolved	0.019		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cadmium (Cd)-Dissolved	0.0077		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454807

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-4 GH_POTW09_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 11:20							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Calcium (Ca)-Dissolved	94.7		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	17-JAN-19	18-JAN-19	R4454807
Copper (Cu)-Dissolved	0.00134		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Iron (Fe)-Dissolved	0.157		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Lithium (Li)-Dissolved	0.0109		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
Magnesium (Mg)-Dissolved	41.1		0.10	mg/L	17-JAN-19	18-JAN-19	R4454807
Manganese (Mn)-Dissolved	0.195		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Molybdenum (Mo)-Dissolved	0.00262		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Nickel (Ni)-Dissolved	0.00118		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Potassium (K)-Dissolved	1.51		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Selenium (Se)-Dissolved	0.861		0.050	ug/L	17-JAN-19	18-JAN-19	R4454807
Silicon (Si)-Dissolved	4.88		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Sodium (Na)-Dissolved	6.90		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Strontium (Sr)-Dissolved	0.343		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454807
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Uranium (U)-Dissolved	0.00197		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Zinc (Zn)-Dissolved	0.0049		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	406		0.50	mg/L		18-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00045		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0321		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.020		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0106		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	94.8		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	0.18		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	0.00158		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	0.163		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0117		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	40.6		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.185		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.00254		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.00161		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.38		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	0.827		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.87		0.10	mg/L		17-JAN-19	R4453267

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-4 GH_POTW09_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 11:20							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	6.56		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.333		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	0.000016		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.00202		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	0.0068		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.8		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	248		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	248		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0510		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.18		0.50	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	744		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.799		0.020	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.9			%		22-JAN-19	
Anion Sum	8.61			meq/L		22-JAN-19	
Cation Sum	8.46			meq/L		22-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.3		-100	%		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0121		0.0050	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b>							
ORP	284		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	165		0.30	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	485	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							
Turbidity	0.93		0.10	NTU		17-JAN-19	R4454007
<b>pH</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-5 GH_POTW10_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 11:02							
Matrix: WG							
<b>Hardness</b>							
Hardness (as CaCO3)	375		0.50	mg/L		18-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00112		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0191		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.036		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0083		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	92.8		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	0.16		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	0.738		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	0.000081		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0167		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	42.2		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.0518		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.00295		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.00104		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.55		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	4.11		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.92		0.10	mg/L		17-JAN-19	R4453267
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	5.07		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.527		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.000701		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.0		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	206		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	206		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0879		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	5.63		0.50	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	726		2.0	uS/cm		21-JAN-19	R4461567

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-5 GH_POTW10_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 11:02 Matrix: WG							
<b>Fluoride in Water by IC</b> Fluoride (F)	0.816		0.020	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b> Cation - Anion Balance	-3.2			%		22-JAN-19	
Anion Sum	8.30			meq/L		22-JAN-19	
Cation Sum	7.78			meq/L		22-JAN-19	
<b>Ion Balance Calculation</b> Ion Balance	93.8		-100	%		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.539		0.0050	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	0.0142		0.0010	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b> ORP	308		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b> Sulfate (SO4)	189		0.30	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b> Total Dissolved Solids	497	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b> Total Suspended Solids	2.0		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b> Turbidity	11.7		0.10	NTU		17-JAN-19	R4454007
<b>pH</b> pH	8.18		0.10	pH		21-JAN-19	R4461567
L2221252-6 GH_POTW15_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 10:55 Matrix: WG							
<b>Miscellaneous Parameters</b> Bicarbonate (HCO3)	277		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	1.04		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.144		0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	1.06		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454807
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454807
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Arsenic (As)-Dissolved	0.00163		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Barium (Ba)-Dissolved	0.0220		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-6 GH_POTW15_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 10:55							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Boron (B)-Dissolved	0.020		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cadmium (Cd)-Dissolved	0.0086		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454807
Calcium (Ca)-Dissolved	124		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	17-JAN-19	18-JAN-19	R4454807
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Iron (Fe)-Dissolved	0.817		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Lithium (Li)-Dissolved	0.0135		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
Magnesium (Mg)-Dissolved	45.2		0.10	mg/L	17-JAN-19	18-JAN-19	R4454807
Manganese (Mn)-Dissolved	0.189		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Molybdenum (Mo)-Dissolved	0.00231		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Nickel (Ni)-Dissolved	0.00083		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Potassium (K)-Dissolved	1.53		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-JAN-19	18-JAN-19	R4454807
Silicon (Si)-Dissolved	4.27		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Sodium (Na)-Dissolved	11.9		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Strontium (Sr)-Dissolved	0.361		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454807
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Uranium (U)-Dissolved	0.00138		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	495		0.50	mg/L		18-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00164		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0225		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.021		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0115		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	128		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	0.00011		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	0.21		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	0.843		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0148		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	45.9		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.187		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.00250		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.00094		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.45		0.050	mg/L		17-JAN-19	R4453267

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-6 GH_POTW15_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 10:55							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Selenium (Se)-Total	<0.050		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.44		0.10	mg/L		17-JAN-19	R4453267
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	11.4		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.379		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	0.000017		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.00140		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.2		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	227		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	227		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0556		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							
Chloride (Cl)	27.6	DLHC	2.5	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	923		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.19	DLHC	0.10	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.1			%		22-JAN-19	
Anion Sum	10.5			meq/L		22-JAN-19	
Cation Sum	10.5			meq/L		22-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	99.7		-100	%		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation reduction potential by elect.</b>							
ORP	290		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	250	DLHC	1.5	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	642	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.0		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-6 GH_POTW15_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 10:55 Matrix: WG							
<b>Turbidity</b> Turbidity	11.8		0.10	NTU		17-JAN-19	R4454007
<b>pH</b> pH	8.11		0.10	pH		21-JAN-19	R4461567
L2221252-7 GH_POTW17_WG_2019-01-01_NP Sampled By: ED on 15-JAN-19 @ 10:33 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	355		5.0	mg/L		21-JAN-19	R4461567
Carbonate (CO3)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Dissolved Organic Carbon	0.94		0.50	mg/L		18-JAN-19	R4456632
Hydroxide (OH)	<5.0		5.0	mg/L		21-JAN-19	R4461567
Total Kjeldahl Nitrogen	0.111		0.050	mg/L		22-JAN-19	R4460088
Total Organic Carbon	0.84		0.50	mg/L		18-JAN-19	R4456632
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-JAN-19	18-JAN-19	R4454807
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-JAN-19	18-JAN-19	R4453882
Dissolved Mercury Filtration Location	FIELD					18-JAN-19	R4454395
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-JAN-19	R4453710
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-JAN-19	18-JAN-19	R4454807
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Barium (Ba)-Dissolved	0.0268		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Boron (B)-Dissolved	0.025		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cadmium (Cd)-Dissolved	0.0477		0.0050	ug/L	17-JAN-19	18-JAN-19	R4454807
Calcium (Ca)-Dissolved	178		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	17-JAN-19	18-JAN-19	R4454807
Copper (Cu)-Dissolved	0.00071		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Iron (Fe)-Dissolved	0.162		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Lead (Pb)-Dissolved	0.000353		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Lithium (Li)-Dissolved	0.0133		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
Magnesium (Mg)-Dissolved	72.6		0.10	mg/L	17-JAN-19	18-JAN-19	R4454807
Manganese (Mn)-Dissolved	0.0775		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Molybdenum (Mo)-Dissolved	0.00113		0.000050	mg/L	17-JAN-19	18-JAN-19	R4454807
Nickel (Ni)-Dissolved	0.0119		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807
Potassium (K)-Dissolved	1.61		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Selenium (Se)-Dissolved	5.73		0.050	ug/L	17-JAN-19	18-JAN-19	R4454807
Silicon (Si)-Dissolved	4.69		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Sodium (Na)-Dissolved	8.44		0.050	mg/L	17-JAN-19	18-JAN-19	R4454807
Strontium (Sr)-Dissolved	0.480		0.00020	mg/L	17-JAN-19	18-JAN-19	R4454807
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-JAN-19	18-JAN-19	R4454807
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-JAN-19	18-JAN-19	R4454807
Uranium (U)-Dissolved	0.00236		0.000010	mg/L	17-JAN-19	18-JAN-19	R4454807
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-JAN-19	18-JAN-19	R4454807

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-7 GH_POTW17_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 10:33							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	17-JAN-19	18-JAN-19	R4454807
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	743		0.50	mg/L		18-JAN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-JAN-19	R4453267
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		19-JAN-19	R4456049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0048		0.0030	mg/L		17-JAN-19	R4453267
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Arsenic (As)-Total	0.00026		0.00010	mg/L		17-JAN-19	R4453267
Barium (Ba)-Total	0.0295		0.00010	mg/L		17-JAN-19	R4453267
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-JAN-19	R4453267
Boron (B)-Total	0.024		0.010	mg/L		17-JAN-19	R4453267
Cadmium (Cd)-Total	0.0528		0.0050	ug/L		17-JAN-19	R4453267
Calcium (Ca)-Total	180		0.050	mg/L		17-JAN-19	R4453267
Chromium (Cr)-Total	0.00011		0.00010	mg/L		17-JAN-19	R4453267
Cobalt (Co)-Total	0.15		0.10	ug/L		17-JAN-19	R4453267
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Iron (Fe)-Total	0.179		0.010	mg/L		17-JAN-19	R4453267
Lead (Pb)-Total	0.000397		0.000050	mg/L		17-JAN-19	R4453267
Lithium (Li)-Total	0.0143		0.0010	mg/L		17-JAN-19	R4453267
Magnesium (Mg)-Total	77.1		0.10	mg/L		17-JAN-19	R4453267
Manganese (Mn)-Total	0.0813		0.00010	mg/L		17-JAN-19	R4453267
Molybdenum (Mo)-Total	0.00115		0.000050	mg/L		17-JAN-19	R4453267
Nickel (Ni)-Total	0.0140		0.00050	mg/L		17-JAN-19	R4453267
Potassium (K)-Total	1.60		0.050	mg/L		17-JAN-19	R4453267
Selenium (Se)-Total	5.29		0.050	ug/L		17-JAN-19	R4453267
Silicon (Si)-Total	4.85		0.10	mg/L		17-JAN-19	R4453267
Silver (Ag)-Total	<0.000010		0.000010	mg/L		17-JAN-19	R4453267
Sodium (Na)-Total	8.50		0.050	mg/L		17-JAN-19	R4453267
Strontium (Sr)-Total	0.490		0.00020	mg/L		17-JAN-19	R4453267
Thallium (Tl)-Total	0.000014		0.000010	mg/L		17-JAN-19	R4453267
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-JAN-19	R4453267
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-JAN-19	R4453267
Uranium (U)-Total	0.00239		0.000010	mg/L		17-JAN-19	R4453267
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-JAN-19	R4453267
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		17-JAN-19	R4453267
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	17.5		1.0	mg/L		21-JAN-19	R4457855
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	291		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		21-JAN-19	R4461567
Alkalinity, Total (as CaCO3)	291		1.0	mg/L		21-JAN-19	R4461567
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0477		0.0050	mg/L		23-JAN-19	R4462633
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		16-JAN-19	R4451833
<b>Chloride in Water by IC</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2221252-7 GH_POTW17_WG_2019-01-01_NP							
Sampled By: ED on 15-JAN-19 @ 10:33							
Matrix: WG							
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.0	DLHC	2.5	mg/L		16-JAN-19	R4451833
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1260		2.0	uS/cm		21-JAN-19	R4461567
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.18	DLHC	0.10	mg/L		16-JAN-19	R4451833
<b>Ion Balance Calculation</b>							
Ion Balance	97.2		-100	%		22-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.4			%		22-JAN-19	
Anion Sum	15.7			meq/L		22-JAN-19	
Cation Sum	15.3			meq/L		22-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.782	DLHC	0.025	mg/L		16-JAN-19	R4451833
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		16-JAN-19	R4451833
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		16-JAN-19	R4452750
<b>Oxidation redution potential by elect.</b>							
ORP	319		-1000	mV		17-JAN-19	R4454108
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		19-JAN-19	R4460251
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	447	DLHC	1.5	mg/L		16-JAN-19	R4451833
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	958	DLHC	20	mg/L		18-JAN-19	R4458634
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.7		1.0	mg/L		21-JAN-19	R4460688
<b>Turbidity</b>							
Turbidity	1.67		0.10	NTU		17-JAN-19	R4454007
<b>pH</b>							
pH	7.99		0.10	pH		21-JAN-19	R4461567

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2221252-1	GH_GHER3_WG_2019-01-01	SFPL	DIS METALS MISSING - FILTER/PRESERVE FROM ROUTINE - Sample was Filtered and Preserved at the laboratory
L2221252-2	GH_GHLRP3_WG_2019-01-0	SFPL	DIS METALS MISSING - FILTER/PRESERVE FROM ROUTINE - Sample was Filtered and Preserved at the laboratory

## Sample Parameter Qualifier Key:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_Q1\_GW

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 1 of 19

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4457855</b>							
<b>WG2973875-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	21-JAN-19
<b>WG2973875-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	21-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4461567</b>							
<b>WG2974061-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	21-JAN-19
<b>WG2974061-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972205-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-JAN-19
<b>WG2972205-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	18-JAN-19
<b>WG2972205-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JAN-19
<b>WG2972205-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Beryllium (Be)-Dissolved			98.0		%		70-130	18-JAN-19
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.9		%		80-120	18-JAN-19
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JAN-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4453267</b>							
<b>WG2972118-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	17-JAN-19
<b>WG2972118-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			94.8		%		80-120	17-JAN-19
<b>WG2972118-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	17-JAN-19
<b>WG2972118-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Beryllium (Be)-Total			97.7		%		70-130	17-JAN-19
<b>BIC-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 2 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BIC-CL</b>	<b>Water</b>							
Batch	R4461567							
<b>WG2974061-10 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	21-JAN-19
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10 LCS</b>								
Bromide (Br)			101.0		%		85-115	16-JAN-19
<b>WG2971651-6 LCS</b>								
Bromide (Br)			102.3		%		85-115	16-JAN-19
<b>WG2971651-5 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	16-JAN-19
<b>WG2971651-9 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	16-JAN-19
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4456632							
<b>WG2973317-18 LCS</b>								
Dissolved Organic Carbon			101.9		%		80-120	18-JAN-19
<b>WG2973317-17 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4456632							
<b>WG2973317-18 LCS</b>								
Total Organic Carbon			102.4		%		80-120	18-JAN-19
<b>WG2973317-17 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10 LCS</b>								
Chloride (Cl)			99.2		%		90-110	16-JAN-19
<b>WG2971651-6 LCS</b>								
Chloride (Cl)			99.6		%		90-110	16-JAN-19
<b>WG2971651-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	16-JAN-19
<b>WG2971651-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	16-JAN-19
<b>CO3-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 3 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>	<b>Water</b>							
Batch R4461567								
<b>WG2974061-10 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	21-JAN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch R4461567								
<b>WG2974061-11 LCS</b>								
Conductivity (@ 25C)			99.8		%		90-110	21-JAN-19
<b>WG2974061-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JAN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch R4451833								
<b>WG2971651-10 LCS</b>								
Fluoride (F)			103.5		%		90-110	16-JAN-19
<b>WG2971651-6 LCS</b>								
Fluoride (F)			103.9		%		90-110	16-JAN-19
<b>WG2971651-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	16-JAN-19
<b>WG2971651-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	16-JAN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch R4453882								
<b>WG2972599-2 LCS</b>								
Mercury (Hg)-Dissolved			98.6		%		80-120	18-JAN-19
<b>WG2972599-6 LCS</b>								
Mercury (Hg)-Dissolved			102.9		%		80-120	18-JAN-19
<b>WG2972599-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-JAN-19
<b>WG2972599-5 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-JAN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch R4456049								
<b>WG2973095-7 DUP</b>		<b>L2221252-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	19-JAN-19
<b>WG2973095-2 LCS</b>								
Mercury (Hg)-Total			103.5		%		80-120	19-JAN-19
<b>WG2973095-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-JAN-19
	<b>Water</b>							



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 4 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972205-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-JAN-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Barium (Ba)-Dissolved		0.0576	0.0579		mg/L	0.6	20	18-JAN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-JAN-19
Boron (B)-Dissolved		0.014	0.014		mg/L	2.0	20	18-JAN-19
Cadmium (Cd)-Dissolved		0.0000463	0.0000479		mg/L	3.4	20	18-JAN-19
Calcium (Ca)-Dissolved		181	186		mg/L	2.9	20	18-JAN-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Copper (Cu)-Dissolved		0.00098	0.00100		mg/L	2.3	20	18-JAN-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-JAN-19
Lead (Pb)-Dissolved		0.000120	0.000126		mg/L	4.3	20	18-JAN-19
Lithium (Li)-Dissolved		0.0110	0.0114		mg/L	3.0	20	18-JAN-19
Magnesium (Mg)-Dissolved		94.8	96.6		mg/L	1.8	20	18-JAN-19
Manganese (Mn)-Dissolved		0.00157	0.00160		mg/L	1.7	20	18-JAN-19
Molybdenum (Mo)-Dissolved		0.000890	0.000885		mg/L	0.5	20	18-JAN-19
Nickel (Ni)-Dissolved		0.00070	0.00071		mg/L	1.5	20	18-JAN-19
Potassium (K)-Dissolved		1.54	1.59		mg/L	3.6	20	18-JAN-19
Selenium (Se)-Dissolved		0.0419	0.0394		mg/L	6.3	20	18-JAN-19
Silicon (Si)-Dissolved		4.10	4.06		mg/L	1.1	20	18-JAN-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-JAN-19
Sodium (Na)-Dissolved		6.63	6.78		mg/L	2.3	20	18-JAN-19
Strontium (Sr)-Dissolved		0.339	0.350		mg/L	3.2	20	18-JAN-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-JAN-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-JAN-19
Uranium (U)-Dissolved		0.00340	0.00349		mg/L	2.6	20	18-JAN-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JAN-19
Zinc (Zn)-Dissolved		0.0023	0.0023		mg/L	0.3	20	18-JAN-19
<b>WG2972205-2</b>								
	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.3		%		80-120	18-JAN-19
Antimony (Sb)-Dissolved			98.4		%		80-120	18-JAN-19
Arsenic (As)-Dissolved			96.2		%		80-120	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 5 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972205-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			96.9		%		80-120	18-JAN-19
Bismuth (Bi)-Dissolved			91.5		%		80-120	18-JAN-19
Boron (B)-Dissolved			94.8		%		80-120	18-JAN-19
Cadmium (Cd)-Dissolved			97.9		%		80-120	18-JAN-19
Calcium (Ca)-Dissolved			96.9		%		80-120	18-JAN-19
Chromium (Cr)-Dissolved			98.1		%		80-120	18-JAN-19
Cobalt (Co)-Dissolved			96.6		%		80-120	18-JAN-19
Copper (Cu)-Dissolved			96.2		%		80-120	18-JAN-19
Iron (Fe)-Dissolved			89.5		%		80-120	18-JAN-19
Lead (Pb)-Dissolved			93.1		%		80-120	18-JAN-19
Lithium (Li)-Dissolved			100.3		%		80-120	18-JAN-19
Magnesium (Mg)-Dissolved			95.5		%		80-120	18-JAN-19
Manganese (Mn)-Dissolved			96.9		%		80-120	18-JAN-19
Molybdenum (Mo)-Dissolved			99.5		%		80-120	18-JAN-19
Nickel (Ni)-Dissolved			95.8		%		80-120	18-JAN-19
Potassium (K)-Dissolved			91.3		%		80-120	18-JAN-19
Selenium (Se)-Dissolved			92.5		%		80-120	18-JAN-19
Silicon (Si)-Dissolved			114.0		%		60-140	18-JAN-19
Silver (Ag)-Dissolved			95.9		%		80-120	18-JAN-19
Sodium (Na)-Dissolved			101.2		%		80-120	18-JAN-19
Strontium (Sr)-Dissolved			102.3		%		80-120	18-JAN-19
Thallium (Tl)-Dissolved			92.6		%		80-120	18-JAN-19
Tin (Sn)-Dissolved			97.6		%		80-120	18-JAN-19
Titanium (Ti)-Dissolved			95.7		%		80-120	18-JAN-19
Uranium (U)-Dissolved			92.8		%		80-120	18-JAN-19
Vanadium (V)-Dissolved			97.7		%		80-120	18-JAN-19
Zinc (Zn)-Dissolved			95.0		%		80-120	18-JAN-19
<b>WG2972205-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 6 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972205-1</b>	<b>MB</b>	<b>LF</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
<b>WG2972205-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Aluminum (Al)-Dissolved			97.8		%		70-130	18-JAN-19
Antimony (Sb)-Dissolved			100.3		%		70-130	18-JAN-19
Arsenic (As)-Dissolved			101.5		%		70-130	18-JAN-19
Barium (Ba)-Dissolved			97.4		%		70-130	18-JAN-19
Bismuth (Bi)-Dissolved			93.8		%		70-130	18-JAN-19
Cadmium (Cd)-Dissolved			104.4		%		70-130	18-JAN-19
Calcium (Ca)-Dissolved			97.9		%		70-130	18-JAN-19
Chromium (Cr)-Dissolved			98.3		%		70-130	18-JAN-19
Cobalt (Co)-Dissolved			98.9		%		70-130	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 7 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972205-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Copper (Cu)-Dissolved			101.0		%		70-130	18-JAN-19
Iron (Fe)-Dissolved			100.3		%		70-130	18-JAN-19
Lead (Pb)-Dissolved			93.6		%		70-130	18-JAN-19
Lithium (Li)-Dissolved			95.9		%		70-130	18-JAN-19
Magnesium (Mg)-Dissolved			95.5		%		70-130	18-JAN-19
Manganese (Mn)-Dissolved			97.8		%		70-130	18-JAN-19
Molybdenum (Mo)-Dissolved			98.6		%		70-130	18-JAN-19
Nickel (Ni)-Dissolved			99.9		%		70-130	18-JAN-19
Potassium (K)-Dissolved			92.7		%		70-130	18-JAN-19
Selenium (Se)-Dissolved			103.7		%		70-130	18-JAN-19
Silver (Ag)-Dissolved			102.4		%		70-130	18-JAN-19
Strontium (Sr)-Dissolved			103.1		%		70-130	18-JAN-19
Thallium (Tl)-Dissolved			93.4		%		70-130	18-JAN-19
Tin (Sn)-Dissolved			99.3		%		70-130	18-JAN-19
Titanium (Ti)-Dissolved			95.5		%		70-130	18-JAN-19
Uranium (U)-Dissolved			92.9		%		70-130	18-JAN-19
Vanadium (V)-Dissolved			98.2		%		70-130	18-JAN-19
Zinc (Zn)-Dissolved			103.4		%		70-130	18-JAN-19
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	18-JAN-19
Antimony (Sb)-Dissolved			97.4		%		80-120	18-JAN-19
Arsenic (As)-Dissolved			98.3		%		80-120	18-JAN-19
Barium (Ba)-Dissolved			98.8		%		80-120	18-JAN-19
Bismuth (Bi)-Dissolved			91.5		%		80-120	18-JAN-19
Boron (B)-Dissolved			94.7		%		80-120	18-JAN-19
Cadmium (Cd)-Dissolved			103.2		%		80-120	18-JAN-19
Calcium (Ca)-Dissolved			96.4		%		80-120	18-JAN-19
Chromium (Cr)-Dissolved			99.0		%		80-120	18-JAN-19
Cobalt (Co)-Dissolved			99.8		%		80-120	18-JAN-19
Copper (Cu)-Dissolved			98.3		%		80-120	18-JAN-19
Iron (Fe)-Dissolved			98.4		%		80-120	18-JAN-19
Lead (Pb)-Dissolved			94.5		%		80-120	18-JAN-19
Lithium (Li)-Dissolved			90.1		%		80-120	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 8 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-2</b>	<b>LCS</b>							
Magnesium (Mg)-Dissolved			102.1		%		80-120	18-JAN-19
Manganese (Mn)-Dissolved			102.1		%		80-120	18-JAN-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	18-JAN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	18-JAN-19
Potassium (K)-Dissolved			100.2		%		80-120	18-JAN-19
Selenium (Se)-Dissolved			103.0		%		80-120	18-JAN-19
Silicon (Si)-Dissolved			108.7		%		60-140	18-JAN-19
Silver (Ag)-Dissolved			92.0		%		80-120	18-JAN-19
Sodium (Na)-Dissolved			104.4		%		80-120	18-JAN-19
Strontium (Sr)-Dissolved			98.7		%		80-120	18-JAN-19
Thallium (Tl)-Dissolved			93.0		%		80-120	18-JAN-19
Tin (Sn)-Dissolved			96.0		%		80-120	18-JAN-19
Titanium (Ti)-Dissolved			99.8		%		80-120	18-JAN-19
Uranium (U)-Dissolved			98.8		%		80-120	18-JAN-19
Vanadium (V)-Dissolved			100.4		%		80-120	18-JAN-19
Zinc (Zn)-Dissolved			98.2		%		80-120	18-JAN-19
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 9 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
<b>Batch</b>	<b>R4456288</b>							
<b>WG2972939-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.4		%		80-120	18-JAN-19
Antimony (Sb)-Dissolved			91.3		%		80-120	18-JAN-19
Arsenic (As)-Dissolved			97.3		%		80-120	18-JAN-19
Barium (Ba)-Dissolved			100.8		%		80-120	18-JAN-19
Bismuth (Bi)-Dissolved			94.9		%		80-120	18-JAN-19
Boron (B)-Dissolved			94.7		%		80-120	18-JAN-19
Cadmium (Cd)-Dissolved			96.0		%		80-120	18-JAN-19
Calcium (Ca)-Dissolved			92.9		%		80-120	18-JAN-19
Chromium (Cr)-Dissolved			101.2		%		80-120	18-JAN-19
Cobalt (Co)-Dissolved			96.1		%		80-120	18-JAN-19
Copper (Cu)-Dissolved			96.0		%		80-120	18-JAN-19
Iron (Fe)-Dissolved			97.7		%		80-120	18-JAN-19
Lead (Pb)-Dissolved			93.8		%		80-120	18-JAN-19
Lithium (Li)-Dissolved			92.8		%		80-120	18-JAN-19
Magnesium (Mg)-Dissolved			103.8		%		80-120	18-JAN-19
Manganese (Mn)-Dissolved			99.3		%		80-120	18-JAN-19
Molybdenum (Mo)-Dissolved			94.3		%		80-120	18-JAN-19
Nickel (Ni)-Dissolved			97.7		%		80-120	18-JAN-19
Potassium (K)-Dissolved			100.1		%		80-120	18-JAN-19





## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 10 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4456288</b>							
<b>WG2972939-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			102.4		%		80-120	18-JAN-19
Silicon (Si)-Dissolved			99.0		%		60-140	18-JAN-19
Silver (Ag)-Dissolved			91.3		%		80-120	18-JAN-19
Sodium (Na)-Dissolved			100.2		%		80-120	18-JAN-19
Strontium (Sr)-Dissolved			89.9		%		80-120	18-JAN-19
Thallium (Tl)-Dissolved			100.2		%		80-120	18-JAN-19
Tin (Sn)-Dissolved			92.5		%		80-120	18-JAN-19
Titanium (Ti)-Dissolved			96.0		%		80-120	18-JAN-19
Uranium (U)-Dissolved			86.7		%		80-120	18-JAN-19
Vanadium (V)-Dissolved			99.9		%		80-120	18-JAN-19
Zinc (Zn)-Dissolved			97.6		%		80-120	18-JAN-19
<b>WG2972939-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 11 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4456288</b>							
<b>WG2972939-1</b>	<b>MB</b>	<b>LF</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4453267</b>							
<b>WG2972118-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	17-JAN-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-JAN-19
Arsenic (As)-Total		0.00011	0.00011		mg/L	4.3	20	17-JAN-19
Barium (Ba)-Total		0.0652	0.0621		mg/L	4.9	20	17-JAN-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	17-JAN-19
Boron (B)-Total		0.016	0.015		mg/L	5.0	20	17-JAN-19
Cadmium (Cd)-Total		0.0000550	0.0000513		mg/L	6.8	20	17-JAN-19
Calcium (Ca)-Total		195	185		mg/L	5.1	20	17-JAN-19
Chromium (Cr)-Total		<0.00010	0.00011	RPD-NA	mg/L	N/A	20	17-JAN-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-JAN-19
Copper (Cu)-Total		0.00127	0.00132		mg/L	4.1	20	17-JAN-19
Iron (Fe)-Total		0.011	<0.010	RPD-NA	mg/L	N/A	20	17-JAN-19
Lead (Pb)-Total		0.000287	0.000293		mg/L	1.9	20	17-JAN-19
Lithium (Li)-Total		0.0120	0.0118		mg/L	2.3	20	17-JAN-19
Magnesium (Mg)-Total		99.7	102		mg/L	2.7	20	17-JAN-19
Manganese (Mn)-Total		0.00154	0.00158		mg/L	2.5	20	17-JAN-19
Molybdenum (Mo)-Total		0.000917	0.000970		mg/L	5.7	20	17-JAN-19
Nickel (Ni)-Total		0.00076	0.00075		mg/L	2.2	20	17-JAN-19
Potassium (K)-Total		1.53	1.53		mg/L	0.3	20	17-JAN-19
Selenium (Se)-Total		0.0356	0.0355		mg/L	0.3	20	17-JAN-19
Silicon (Si)-Total		4.42	4.44		mg/L	0.6	20	17-JAN-19
Silver (Ag)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	17-JAN-19
Sodium (Na)-Total		6.86	6.83		mg/L	0.4	20	17-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 12 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4453267</b>							
<b>WG2972118-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Strontium (Sr)-Total		0.351	0.346		mg/L	1.5	20	17-JAN-19
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	17-JAN-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	17-JAN-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-JAN-19
Uranium (U)-Total		0.00377	0.00390		mg/L	3.2	20	17-JAN-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	17-JAN-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	17-JAN-19
<b>WG2972118-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.8		%		80-120	17-JAN-19
Antimony (Sb)-Total			95.9		%		80-120	17-JAN-19
Arsenic (As)-Total			94.6		%		80-120	17-JAN-19
Barium (Ba)-Total			96.9		%		80-120	17-JAN-19
Bismuth (Bi)-Total			98.4		%		80-120	17-JAN-19
Boron (B)-Total			92.2		%		80-120	17-JAN-19
Cadmium (Cd)-Total			97.9		%		80-120	17-JAN-19
Calcium (Ca)-Total			96.8		%		80-120	17-JAN-19
Chromium (Cr)-Total			96.6		%		80-120	17-JAN-19
Cobalt (Co)-Total			95.3		%		80-120	17-JAN-19
Copper (Cu)-Total			95.5		%		80-120	17-JAN-19
Iron (Fe)-Total			91.6		%		80-120	17-JAN-19
Lead (Pb)-Total			98.2		%		80-120	17-JAN-19
Lithium (Li)-Total			95.8		%		80-120	17-JAN-19
Magnesium (Mg)-Total			97.9		%		80-120	17-JAN-19
Manganese (Mn)-Total			95.8		%		80-120	17-JAN-19
Molybdenum (Mo)-Total			96.9		%		80-120	17-JAN-19
Nickel (Ni)-Total			95.5		%		80-120	17-JAN-19
Potassium (K)-Total			90.8		%		80-120	17-JAN-19
Selenium (Se)-Total			96.9		%		80-120	17-JAN-19
Silicon (Si)-Total			100.7		%		80-120	17-JAN-19
Silver (Ag)-Total			91.8		%		80-120	17-JAN-19
Sodium (Na)-Total			99.7		%		80-120	17-JAN-19
Strontium (Sr)-Total			94.5		%		80-120	17-JAN-19
Thallium (Tl)-Total			95.6		%		80-120	17-JAN-19
Tin (Sn)-Total			94.0		%		80-120	17-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 13 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4453267</b>							
<b>WG2972118-2 LCS</b>								
Titanium (Ti)-Total			94.6		%		80-120	17-JAN-19
Uranium (U)-Total			98.4		%		80-120	17-JAN-19
Vanadium (V)-Total			97.1		%		80-120	17-JAN-19
Zinc (Zn)-Total			97.8		%		80-120	17-JAN-19
<b>WG2972118-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	17-JAN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-JAN-19
Boron (B)-Total			<0.010		mg/L		0.01	17-JAN-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-JAN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-JAN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-JAN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	17-JAN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-JAN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-JAN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-JAN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	17-JAN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-JAN-19
Potassium (K)-Total			<0.050		mg/L		0.05	17-JAN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-JAN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	17-JAN-19
Silver (Ag)-Total			0.000012	MB-LOR	mg/L		0.00001	17-JAN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	17-JAN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-JAN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	17-JAN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-JAN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-JAN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-JAN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 14 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4453267</b>							
<b>WG2972118-1</b>	<b>MB</b>							
Zinc (Zn)-Total			<0.0030		mg/L		0.003	17-JAN-19
<b>WG2972118-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Aluminum (Al)-Total			96.6		%		70-130	17-JAN-19
Antimony (Sb)-Total			99.0		%		70-130	17-JAN-19
Arsenic (As)-Total			95.3		%		70-130	17-JAN-19
Barium (Ba)-Total			99.5		%		70-130	17-JAN-19
Bismuth (Bi)-Total			106.6		%		70-130	17-JAN-19
Cadmium (Cd)-Total			104.0		%		70-130	17-JAN-19
Calcium (Ca)-Total			97.8		%		70-130	17-JAN-19
Chromium (Cr)-Total			97.2		%		70-130	17-JAN-19
Cobalt (Co)-Total			97.7		%		70-130	17-JAN-19
Copper (Cu)-Total			98.9		%		70-130	17-JAN-19
Iron (Fe)-Total			99.1		%		70-130	17-JAN-19
Lead (Pb)-Total			100.8		%		70-130	17-JAN-19
Lithium (Li)-Total			101.9		%		70-130	17-JAN-19
Magnesium (Mg)-Total			98.2		%		70-130	17-JAN-19
Manganese (Mn)-Total			97.0		%		70-130	17-JAN-19
Molybdenum (Mo)-Total			95.8		%		70-130	17-JAN-19
Nickel (Ni)-Total			98.9		%		70-130	17-JAN-19
Potassium (K)-Total			93.3		%		70-130	17-JAN-19
Selenium (Se)-Total			102.8		%		70-130	17-JAN-19
Silicon (Si)-Total			108.9		%		70-130	17-JAN-19
Silver (Ag)-Total			100.4		%		70-130	17-JAN-19
Sodium (Na)-Total			101.0		%		70-130	17-JAN-19
Strontium (Sr)-Total			95.6		%		70-130	17-JAN-19
Thallium (Tl)-Total			98.5		%		70-130	17-JAN-19
Tin (Sn)-Total			98.3		%		70-130	17-JAN-19
Titanium (Ti)-Total			96.6		%		70-130	17-JAN-19
Uranium (U)-Total			102.1		%		70-130	17-JAN-19
Vanadium (V)-Total			97.1		%		70-130	17-JAN-19
Zinc (Zn)-Total			98.4		%		70-130	17-JAN-19
<b>Batch</b>	<b>R4454454</b>							
<b>WG2972118-4</b>	<b>MS</b>	<b>L2221252-2</b>						
Boron (B)-Total			114.0		%		70-130	18-JAN-19



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 15 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4462633								
WG2975323-6	LCS							
Ammonia as N			99.8		%		85-115	23-JAN-19
WG2975323-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	23-JAN-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4451833								
WG2971651-10	LCS							
Nitrite (as N)			104.7		%		90-110	16-JAN-19
WG2971651-6	LCS							
Nitrite (as N)			105.1		%		90-110	16-JAN-19
WG2971651-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-JAN-19
WG2971651-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	16-JAN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4451833								
WG2971651-10	LCS							
Nitrate (as N)			100.1		%		90-110	16-JAN-19
WG2971651-6	LCS							
Nitrate (as N)			100.8		%		90-110	16-JAN-19
WG2971651-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-JAN-19
WG2971651-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	16-JAN-19
<b>OH-CL</b>								
<b>Water</b>								
Batch R4461567								
WG2974061-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	21-JAN-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4454108								
WG2972065-4	CRM	CL-ORP						
ORP			227		mV		210-230	17-JAN-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 16 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4460251</b>							
<b>WG2974576-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	19-JAN-19
<b>WG2974576-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.9		%		80-120	19-JAN-19
<b>WG2974576-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-JAN-19
<b>WG2974576-4</b>	<b>MS</b>	<b>L2221252-1</b>						
Phosphorus (P)-Total			80.0		%		70-130	19-JAN-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4461567</b>							
<b>WG2974061-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	21-JAN-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4452750</b>							
<b>WG2971203-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			111.6		%		80-120	16-JAN-19
<b>WG2971203-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-JAN-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4451833</b>							
<b>WG2971651-10</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	16-JAN-19
<b>WG2971651-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.9		%		90-110	16-JAN-19
<b>WG2971651-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-JAN-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4458634</b>							
<b>WG2972426-5</b>	<b>LCS</b>							
Total Dissolved Solids			103.2		%		85-115	18-JAN-19
<b>WG2972426-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-JAN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 17 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4460088</b>							
<b>WG2971625-3</b>	<b>DUP</b>	<b>L2221252-1</b>						
Total Kjeldahl Nitrogen		0.201	0.197		mg/L	1.9	20	22-JAN-19
<b>WG2971625-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.5		%		75-125	22-JAN-19
<b>WG2971625-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JAN-19
<b>WG2971625-4</b>	<b>MS</b>	<b>L2221252-1</b>						
Total Kjeldahl Nitrogen			86.0		%		70-130	22-JAN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4460688</b>							
<b>WG2973703-4</b>	<b>LCS</b>							
Total Suspended Solids			100.6		%		85-115	21-JAN-19
<b>WG2973703-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	21-JAN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4454007</b>							
<b>WG2972046-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	17-JAN-19
<b>WG2972046-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	17-JAN-19



# Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 18 of 19

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2221252

Report Date: 12-NOV-19

Page 19 of 19

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	15-JAN-19 09:50	17-JAN-19 09:00	0.25	47	hours	EHTR-FM
	2	15-JAN-19 09:50	17-JAN-19 09:00	0.25	47	hours	EHTR-FM
	3	15-JAN-19 09:50	17-JAN-19 09:00	0.25	47	hours	EHTR-FM
	4	15-JAN-19 11:20	17-JAN-19 09:00	0.25	46	hours	EHTR-FM
	5	15-JAN-19 11:02	17-JAN-19 09:00	0.25	46	hours	EHTR-FM
	6	15-JAN-19 10:55	17-JAN-19 09:00	0.25	46	hours	EHTR-FM
	7	15-JAN-19 10:33	17-JAN-19 09:00	0.25	47	hours	EHTR-FM
pH							
	1	15-JAN-19 09:50	21-JAN-19 15:00	0.25	149	hours	EHTR-FM
	2	15-JAN-19 09:50	21-JAN-19 15:00	0.25	149	hours	EHTR-FM
	3	15-JAN-19 09:50	21-JAN-19 15:00	0.25	149	hours	EHTR-FM
	4	15-JAN-19 11:20	21-JAN-19 15:00	0.25	148	hours	EHTR-FM
	5	15-JAN-19 11:02	21-JAN-19 15:00	0.25	148	hours	EHTR-FM
	6	15-JAN-19 10:55	21-JAN-19 15:00	0.25	148	hours	EHTR-FM
	7	15-JAN-19 10:33	21-JAN-19 15:00	0.25	149	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:


Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2221252 were received on 16-JAN-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>GHO Q1 GW</b>		TURNAROUND TIME:			RUSH:				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# <b>Greenhills Operation</b>				Lab Name <b>ALS Calgary</b>			Report Format / Distribution		
Project Manager <b>Jennifer Kropp</b>				Lab Contact <b>Lyudmyla Shvets</b>			Excel <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EDD <input checked="" type="checkbox"/>		
Email <b>Jennifer.Kropp@teck.com</b>				Email <b>Lyudmyla.Shvets@ALSGlobal.com</b>			Email 1: <b>Jennifer.Kropp@teck.com</b>		
Address <b>P.O. BOX 5000</b>				Address <b>2559 29 Street NE</b>			Email 2: <b>teckcoal@equisonline.com</b>		
City <b>Elkford</b> Province <b>BC</b>				City <b>Calgary</b> Province <b>AB</b>			Email 3:		
Postal Code <b>V0R1H0</b> Country <b>Canada</b>				Postal Code <b>T1Y 7B5</b> Country <b>Canada</b>			Email 4:		
Phone Number <b>250-865-3341</b>				Phone Number <b>403 407 1794</b>			PO number <b>610013</b>		

SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	IIG-T-CVAF-VA	IIG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	ALS_Package-TKNVTOC	TECKCOAL-MET-D-VA	Filtered - F: Field, L: Lab, P: Field & Lab, S: None		
																	
	<b>L2221252-COFC</b>																
GH_GHER3_WG_2019-01-01_NP	GH_GHER3	WG		2019/01/15	09:50	G	7	1	1	1	1	1	1	1			
GH_GHLRP3_WG_2019-01-01_NP	GH_GHLRP3	WG		2019/01/15	09:50	G	7	1	1	1	1	1	1	1			
GH_POTW06_WG_2019-01-01_NP	GH_POTW06	WG		2019/01/15	09:50	G	7	1	1	1	1	1	1	1			
GH_POTW09_WG_2019-01-01_NP	GH_POTW09	WG		2019/01/15	11:20	G	7	1	1	1	1	1	1	1			
GH_POTW10_WG_2019-01-01_NP	GH_POTW10	WG		2019/01/15	11:02	G	7	1	1	1	1	1	1	1			
GH_POTW15_WG_2019-01-01_NP	GH_POTW15	WG		2019/01/15	10:55	G	7	1	1	1	1	1	1	1			
GH_POTW17_WG_2019-01-01_NP	GH_POTW17	WG		2019/01/15	10:33	G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		REINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTEE BY/AFFILIATION		DATE/TIME	
						OK		2019/01/16 0930	

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<b>ED</b>	Mobile #	
Sampler's Signature	<b>EL</b>	Date/Time	<b>Jan 15/19 3:30</b>

6°C



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 05-MAR-19  
Report Date: 12-NOV-19 16:00 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2239577  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-03  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 11:15  
RRR: Total Ultra-Trace Mercury were analyzing from Routine bottles.

22-MAR-2019 Additional analysis for total metals and ultra-trace mercury on samples L2239577-1 and -2.

12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-1 GH_GA-MW-1_WG_2019-01-01_NP							
Sampled By: JF on 04-MAR-19 @ 11:54							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	465		5.0	mg/L		08-MAR-19	R4552887
Biochemical Oxygen Demand	<2.0		2.0	mg/L		05-MAR-19	R4554667
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAR-19	R4552887
Dissolved Organic Carbon	2.61		0.50	mg/L		09-MAR-19	R4554507
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAR-19	R4552887
Total Kjeldahl Nitrogen	0.367		0.050	mg/L		08-MAR-19	R4552996
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		12-MAR-19	R4558269
Mercury (Hg)-Total	0.00057	RRR	0.00050	ug/L		21-MAR-19	R4577468
Total Organic Carbon	3.13		0.50	mg/L		09-MAR-19	R4554507
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-MAR-19	07-MAR-19	R4548687
Dissolved Metals Filtration Location	FIELD					06-MAR-19	R4547589
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	07-MAR-19	09-MAR-19	R4553648
Dissolved Mercury Filtration Location	FIELD					07-MAR-19	R4550727
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-MAR-19	R4547589
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-MAR-19	07-MAR-19	R4548687
Antimony (Sb)-Dissolved	0.00070	DTMF	0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Arsenic (As)-Dissolved	0.00049		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Barium (Ba)-Dissolved	0.0421		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687
Boron (B)-Dissolved	0.748		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Cadmium (Cd)-Dissolved	0.0313		0.0050	ug/L	06-MAR-19	07-MAR-19	R4548687
Calcium (Ca)-Dissolved	62.9		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Cobalt (Co)-Dissolved	0.54		0.10	ug/L	06-MAR-19	07-MAR-19	R4548687
Copper (Cu)-Dissolved	0.0314		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Iron (Fe)-Dissolved	0.027		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687
Lithium (Li)-Dissolved	0.152		0.0010	mg/L	06-MAR-19	07-MAR-19	R4548687
Magnesium (Mg)-Dissolved	32.4		0.10	mg/L	06-MAR-19	07-MAR-19	R4548687
Manganese (Mn)-Dissolved	0.176		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Molybdenum (Mo)-Dissolved	0.00595		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687
Nickel (Ni)-Dissolved	0.00412		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Potassium (K)-Dissolved	3.32		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Selenium (Se)-Dissolved	0.124		0.050	ug/L	06-MAR-19	07-MAR-19	R4548687
Silicon (Si)-Dissolved	3.70		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Sodium (Na)-Dissolved	152		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Strontium (Sr)-Dissolved	4.47		0.00020	mg/L	06-MAR-19	07-MAR-19	R4548687
Thallium (Tl)-Dissolved	0.000029		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Uranium (U)-Dissolved	0.00207		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Zinc (Zn)-Dissolved	0.0026		0.0010	mg/L	06-MAR-19	07-MAR-19	R4548687
<b>Hardness</b>							
Hardness (as CaCO3)	290		0.50	mg/L		07-MAR-19	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-1 GH_GA-MW-1_WG_2019-01-01_NP							
Sampled By: JF on 04-MAR-19 @ 11:54							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		19-MAR-19	R4571992
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0797		0.0030	mg/L		19-MAR-19	R4571992
Antimony (Sb)-Total	0.00048		0.00010	mg/L		19-MAR-19	R4571992
Arsenic (As)-Total	0.00062		0.00010	mg/L		19-MAR-19	R4571992
Barium (Ba)-Total	0.0464		0.00010	mg/L		19-MAR-19	R4571992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Boron (B)-Total	0.869		0.010	mg/L		19-MAR-19	R4571992
Cadmium (Cd)-Total	0.0377		0.0050	ug/L		19-MAR-19	R4571992
Calcium (Ca)-Total	66.5		0.050	mg/L		19-MAR-19	R4571992
Chromium (Cr)-Total	0.00032		0.00010	mg/L		19-MAR-19	R4571992
Cobalt (Co)-Total	0.88		0.10	ug/L		19-MAR-19	R4571992
Copper (Cu)-Total	0.0399		0.00050	mg/L		19-MAR-19	R4571992
Iron (Fe)-Total	0.116		0.010	mg/L		19-MAR-19	R4571992
Lead (Pb)-Total	0.000064		0.000050	mg/L		19-MAR-19	R4571992
Lithium (Li)-Total	0.161		0.0010	mg/L		19-MAR-19	R4571992
Magnesium (Mg)-Total	35.2		0.10	mg/L		19-MAR-19	R4571992
Manganese (Mn)-Total	0.245		0.00010	mg/L		19-MAR-19	R4571992
Molybdenum (Mo)-Total	0.00657		0.000050	mg/L		19-MAR-19	R4571992
Nickel (Ni)-Total	0.00493		0.00050	mg/L		19-MAR-19	R4571992
Potassium (K)-Total	3.53		0.050	mg/L		19-MAR-19	R4571992
Selenium (Se)-Total	0.121		0.050	ug/L		19-MAR-19	R4571992
Silicon (Si)-Total	4.12		0.10	mg/L		19-MAR-19	R4571992
Silver (Ag)-Total	<0.000010		0.000010	mg/L		19-MAR-19	R4571992
Sodium (Na)-Total	157		0.050	mg/L		19-MAR-19	R4571992
Strontium (Sr)-Total	4.52		0.00020	mg/L		19-MAR-19	R4571992
Thallium (Tl)-Total	0.000036		0.000010	mg/L		19-MAR-19	R4571992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Uranium (U)-Total	0.00209		0.000010	mg/L		19-MAR-19	R4571992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		19-MAR-19	R4571992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		19-MAR-19	R4571992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	16.3		1.0	mg/L		08-MAR-19	R4552917
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	381		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Total (as CaCO3)	381		1.0	mg/L		08-MAR-19	R4552887
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.194		0.0050	mg/L		10-MAR-19	R4554812
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-MAR-19	R4552247
<b>Chloride in Water by IC</b>							
Chloride (Cl)	15.8	DLHC	2.5	mg/L		07-MAR-19	R4552247
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1200		2.0	uS/cm		08-MAR-19	R4552887
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.54	DLHC	0.10	mg/L		07-MAR-19	R4552247
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.8			%		08-MAR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-1 GH_GA-MW-1_WG_2019-01-01_NP Sampled By: JF on 04-MAR-19 @ 11:54 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	13.7			meq/L		08-MAR-19	
Cation Sum	12.5			meq/L		08-MAR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	90.9		-100	%		08-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.172	DLHC	0.025	mg/L		07-MAR-19	R4552247
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0100	DLHC	0.0050	mg/L		07-MAR-19	R4552247
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0329		0.0010	mg/L		05-MAR-19	R4544147
<b>Oxidation redution potential by elect.</b>							
ORP	416		-1000	mV		06-MAR-19	R4547308
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0393		0.0020	mg/L		06-MAR-19	R4545749
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	271	DLHC	1.5	mg/L		07-MAR-19	R4552247
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	765		20	mg/L		08-MAR-19	R4553796
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		11-MAR-19	R4559193
<b>Turbidity</b>							
Turbidity	3.56		0.10	NTU		06-MAR-19	R4547371
<b>pH</b>							
pH	7.67		0.10	pH		08-MAR-19	R4552887
L2239577-2 GH_GA-MW-4_WG_2019-01-01_NP Sampled By: JF on 04-MAR-19 @ 13:38 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	208		5.0	mg/L		08-MAR-19	R4552887
Biochemical Oxygen Demand	<2.0		2.0	mg/L		05-MAR-19	R4554667
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAR-19	R4552887
Dissolved Organic Carbon	<0.50		0.50	mg/L		09-MAR-19	R4554507
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAR-19	R4552887
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		08-MAR-19	R4552996
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		12-MAR-19	R4558269
Mercury (Hg)-Total	<0.00050	RRR	0.00050	ug/L		21-MAR-19	R4577468
Total Organic Carbon	<0.50		0.50	mg/L		09-MAR-19	R4554507
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-MAR-19	07-MAR-19	R4548687
Dissolved Metals Filtration Location	FIELD					06-MAR-19	R4547589
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	07-MAR-19	09-MAR-19	R4553648
Dissolved Mercury Filtration Location	FIELD					07-MAR-19	R4550727
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-MAR-19	R4547589
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-MAR-19	07-MAR-19	R4548687
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Barium (Ba)-Dissolved	0.0661		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-2 GH_GA-MW-4_WG_2019-01-01_NP							
Sampled By: JF on 04-MAR-19 @ 13:38							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Boron (B)-Dissolved	0.018		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Cadmium (Cd)-Dissolved	0.0051		0.0050	ug/L	06-MAR-19	07-MAR-19	R4548687
Calcium (Ca)-Dissolved	47.9		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-MAR-19	07-MAR-19	R4548687
Copper (Cu)-Dissolved	0.00084		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687
Lithium (Li)-Dissolved	0.0174		0.0010	mg/L	06-MAR-19	07-MAR-19	R4548687
Magnesium (Mg)-Dissolved	17.0		0.10	mg/L	06-MAR-19	07-MAR-19	R4548687
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-MAR-19	08-MAR-19	R4552610
Molybdenum (Mo)-Dissolved	0.00184		0.000050	mg/L	06-MAR-19	07-MAR-19	R4548687
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Potassium (K)-Dissolved	0.974		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Selenium (Se)-Dissolved	1.74		0.050	ug/L	06-MAR-19	07-MAR-19	R4548687
Silicon (Si)-Dissolved	2.18		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Sodium (Na)-Dissolved	4.86		0.050	mg/L	06-MAR-19	07-MAR-19	R4548687
Strontium (Sr)-Dissolved	0.153		0.00020	mg/L	06-MAR-19	07-MAR-19	R4548687
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-MAR-19	07-MAR-19	R4548687
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-MAR-19	07-MAR-19	R4548687
Uranium (U)-Dissolved	0.00130		0.000010	mg/L	06-MAR-19	07-MAR-19	R4548687
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-MAR-19	07-MAR-19	R4548687
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-MAR-19	07-MAR-19	R4548687
<b>Hardness</b>							
Hardness (as CaCO3)	190		0.50	mg/L		08-MAR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		19-MAR-19	R4571992
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		19-MAR-19	R4571992
Antimony (Sb)-Total	0.00017		0.00010	mg/L		19-MAR-19	R4571992
Arsenic (As)-Total	0.00014		0.00010	mg/L		19-MAR-19	R4571992
Barium (Ba)-Total	0.0687		0.00010	mg/L		19-MAR-19	R4571992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Boron (B)-Total	0.014		0.010	mg/L		19-MAR-19	R4571992
Cadmium (Cd)-Total	0.0065		0.0050	ug/L		19-MAR-19	R4571992
Calcium (Ca)-Total	46.4		0.050	mg/L		19-MAR-19	R4571992
Chromium (Cr)-Total	0.00035		0.00010	mg/L		19-MAR-19	R4571992
Cobalt (Co)-Total	<0.10		0.10	ug/L		19-MAR-19	R4571992
Copper (Cu)-Total	0.00377		0.00050	mg/L		19-MAR-19	R4571992
Iron (Fe)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Lead (Pb)-Total	0.000052		0.000050	mg/L		19-MAR-19	R4571992
Lithium (Li)-Total	0.0171		0.0010	mg/L		19-MAR-19	R4571992
Magnesium (Mg)-Total	17.3		0.10	mg/L		19-MAR-19	R4571992
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Molybdenum (Mo)-Total	0.00187		0.000050	mg/L		19-MAR-19	R4571992
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		19-MAR-19	R4571992
Potassium (K)-Total	0.955		0.050	mg/L		19-MAR-19	R4571992
Selenium (Se)-Total	1.59		0.050	ug/L		19-MAR-19	R4571992
Silicon (Si)-Total	2.28		0.10	mg/L		19-MAR-19	R4571992

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-2 GH_GA-MW-4_WG_2019-01-01_NP							
Sampled By: JF on 04-MAR-19 @ 13:38							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Total	0.000040		0.000010	mg/L		19-MAR-19	R4571992
Sodium (Na)-Total	4.80		0.050	mg/L		19-MAR-19	R4571992
Strontium (Sr)-Total	0.158		0.00020	mg/L		19-MAR-19	R4571992
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		19-MAR-19	R4571992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Uranium (U)-Total	0.00134		0.000010	mg/L		19-MAR-19	R4571992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		19-MAR-19	R4571992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		19-MAR-19	R4571992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.1		1.0	mg/L		08-MAR-19	R4552917
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	170		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-MAR-19	R4552887
Alkalinity, Total (as CaCO3)	170		1.0	mg/L		08-MAR-19	R4552887
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0078		0.0050	mg/L		10-MAR-19	R4554812
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-MAR-19	R4552247
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.18		0.50	mg/L		07-MAR-19	R4552247
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	371		2.0	uS/cm		08-MAR-19	R4552887
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.170		0.020	mg/L		07-MAR-19	R4552247
<b>Ion Balance Calculation</b>							
Ion Balance	96.6		-100	%		08-MAR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.7			%		08-MAR-19	
Anion Sum	4.17			meq/L		08-MAR-19	
Cation Sum	4.02			meq/L		08-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.411		0.0050	mg/L		07-MAR-19	R4552247
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0018		0.0010	mg/L		07-MAR-19	R4552247
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		05-MAR-19	R4544147
<b>Oxidation redution potential by elect.</b>							
ORP	422		-1000	mV		06-MAR-19	R4547308
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0030		0.0020	mg/L		06-MAR-19	R4545749
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	30.5		0.30	mg/L		07-MAR-19	R4552247
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	221		20	mg/L		08-MAR-19	R4553796
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		11-MAR-19	R4559193
<b>Turbidity</b>							
Turbidity	0.22		0.10	NTU		06-MAR-19	R4547371
<b>pH</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2239577-2    GH_GA-MW-4_WG_2019-01-01_NP Sampled By:   JF on 04-MAR-19 @ 13:38 Matrix:        WG <b>pH</b> pH	7.88		0.10	pH		08-MAR-19	R4552887

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O <sub>2</sub> electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			

It is recommended that this analysis be conducted in the field.

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-03

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4552917							
<b>WG3002902-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.8		%		85-115	08-MAR-19
<b>WG3002902-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	08-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	08-MAR-19
<b>WG3002878-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	08-MAR-19
<b>WG3002878-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAR-19
<b>WG3002878-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4548687							
<b>WG3001391-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.7		%		80-120	07-MAR-19
<b>WG3001391-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4571992							
<b>WG3008530-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.8		%		80-120	19-MAR-19
<b>WG3008530-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-MAR-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	08-MAR-19
<b>BOD-BC-CL</b>								
	<b>Water</b>							
Batch	R4554667							
<b>WG3003449-2</b>	<b>LCS</b>							
Biochemical Oxygen Demand			92.4		%		85-115	05-MAR-19
<b>WG3003449-1</b>	<b>MB</b>							
Biochemical Oxygen Demand			<2.0		mg/L		2	05-MAR-19



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-MAR-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4554507							
<b>WG3003391-3</b>	<b>DUP</b>	<b>L2239577-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	09-MAR-19
<b>WG3003391-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.0		%		80-120	09-MAR-19
<b>WG3003391-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-MAR-19
<b>WG3003391-4</b>	<b>MS</b>	<b>L2239577-2</b>						
Dissolved Organic Carbon			99.2		%		70-130	09-MAR-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4554507							
<b>WG3003391-3</b>	<b>DUP</b>	<b>L2239577-2</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	09-MAR-19
<b>WG3003391-2</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	09-MAR-19
<b>WG3003391-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	09-MAR-19
<b>WG3003391-4</b>	<b>MS</b>	<b>L2239577-2</b>						
Total Organic Carbon			103.1		%		70-130	09-MAR-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Chloride (Cl)			98.2		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-MAR-19
<b>CO3-CL</b> <b>Water</b>								
Batch	R4552887							
<b>WG3002878-1</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	08-MAR-19
<b>EC-L-PCT-CL</b> <b>Water</b>								





## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4552887							
<b>WG3002878-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.9		%		90-110	08-MAR-19
<b>WG3002878-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.8		%		90-110	08-MAR-19
<b>WG3002878-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAR-19
<b>WG3002878-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Fluoride (F)			98.9		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-MAR-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4553648							
<b>WG3001827-3</b>	<b>DUP</b>	<b>L2239577-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	09-MAR-19
<b>WG3001827-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.8		%		80-120	09-MAR-19
<b>WG3001827-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	09-MAR-19
<b>WG3001827-4</b>	<b>MS</b>	<b>L2239577-2</b>						
Mercury (Hg)-Dissolved			109.0		%		70-130	09-MAR-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
Batch	R4558269							
<b>WG3004529-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.8		%		80-120	12-MAR-19
<b>WG3004529-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	12-MAR-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
Batch	R4577468							
<b>WG3011553-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.4		%		80-120	21-MAR-19
<b>WG3011553-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4548687</b>							
<b>WG3001391-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			90.6		%		80-120	07-MAR-19
Antimony (Sb)-Dissolved			91.2		%		80-120	07-MAR-19
Arsenic (As)-Dissolved			85.6		%		80-120	07-MAR-19
Barium (Ba)-Dissolved			86.3		%		80-120	07-MAR-19
Bismuth (Bi)-Dissolved			92.8		%		80-120	07-MAR-19
Boron (B)-Dissolved			90.9		%		80-120	07-MAR-19
Cadmium (Cd)-Dissolved			89.0		%		80-120	07-MAR-19
Calcium (Ca)-Dissolved			98.3		%		80-120	07-MAR-19
Chromium (Cr)-Dissolved			88.4		%		80-120	07-MAR-19
Cobalt (Co)-Dissolved			87.8		%		80-120	07-MAR-19
Copper (Cu)-Dissolved			85.7		%		80-120	07-MAR-19
Iron (Fe)-Dissolved			84.5		%		80-120	07-MAR-19
Lead (Pb)-Dissolved			95.4		%		80-120	07-MAR-19
Lithium (Li)-Dissolved			96.4		%		80-120	07-MAR-19
Magnesium (Mg)-Dissolved			88.0		%		80-120	07-MAR-19
Manganese (Mn)-Dissolved			91.6		%		80-120	07-MAR-19
Molybdenum (Mo)-Dissolved			90.5		%		80-120	07-MAR-19
Nickel (Ni)-Dissolved			84.8		%		80-120	07-MAR-19
Potassium (K)-Dissolved			91.8		%		80-120	07-MAR-19
Selenium (Se)-Dissolved			91.9		%		80-120	07-MAR-19
Silicon (Si)-Dissolved			87.0		%		60-140	07-MAR-19
Silver (Ag)-Dissolved			91.8		%		80-120	07-MAR-19
Sodium (Na)-Dissolved			87.4		%		80-120	07-MAR-19
Strontium (Sr)-Dissolved			93.2		%		80-120	07-MAR-19
Thallium (Tl)-Dissolved			91.3		%		80-120	07-MAR-19
Tin (Sn)-Dissolved			85.0		%		80-120	07-MAR-19
Titanium (Ti)-Dissolved			84.6		%		80-120	07-MAR-19
Uranium (U)-Dissolved			96.5		%		80-120	07-MAR-19
Vanadium (V)-Dissolved			89.1		%		80-120	07-MAR-19
Zinc (Zn)-Dissolved			83.1		%		80-120	07-MAR-19
<b>WG3001391-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4548687</b>							
<b>WG3001391-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.8		%		80-120	19-MAR-19
Antimony (Sb)-Total			100.9		%		80-120	19-MAR-19
Arsenic (As)-Total			96.2		%		80-120	19-MAR-19
Barium (Ba)-Total			94.6		%		80-120	19-MAR-19



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2 LCS</b>								
Bismuth (Bi)-Total			94.2		%		80-120	19-MAR-19
Boron (B)-Total			98.9		%		80-120	19-MAR-19
Cadmium (Cd)-Total			99.3		%		80-120	19-MAR-19
Calcium (Ca)-Total			100.1		%		80-120	19-MAR-19
Chromium (Cr)-Total			97.5		%		80-120	19-MAR-19
Cobalt (Co)-Total			97.8		%		80-120	19-MAR-19
Copper (Cu)-Total			96.4		%		80-120	19-MAR-19
Iron (Fe)-Total			94.2		%		80-120	19-MAR-19
Lead (Pb)-Total			97.8		%		80-120	19-MAR-19
Lithium (Li)-Total			98.0		%		80-120	19-MAR-19
Magnesium (Mg)-Total			96.1		%		80-120	19-MAR-19
Manganese (Mn)-Total			96.6		%		80-120	19-MAR-19
Molybdenum (Mo)-Total			96.6		%		80-120	19-MAR-19
Nickel (Ni)-Total			96.3		%		80-120	19-MAR-19
Potassium (K)-Total			102.1		%		80-120	19-MAR-19
Selenium (Se)-Total			94.9		%		80-120	19-MAR-19
Silicon (Si)-Total			96.9		%		80-120	19-MAR-19
Silver (Ag)-Total			94.0		%		80-120	19-MAR-19
Sodium (Na)-Total			97.7		%		80-120	19-MAR-19
Strontium (Sr)-Total			98.2		%		80-120	19-MAR-19
Thallium (Tl)-Total			95.6		%		80-120	19-MAR-19
Tin (Sn)-Total			96.8		%		80-120	19-MAR-19
Titanium (Ti)-Total			96.2		%		80-120	19-MAR-19
Uranium (U)-Total			98.2		%		80-120	19-MAR-19
Vanadium (V)-Total			99.0		%		80-120	19-MAR-19
Zinc (Zn)-Total			97.1		%		80-120	19-MAR-19
<b>WG3008530-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-MAR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Boron (B)-Total			<0.010		mg/L		0.01	19-MAR-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	19-MAR-19



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-MAR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	19-MAR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-MAR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-MAR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Potassium (K)-Total			<0.050		mg/L		0.05	19-MAR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	19-MAR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	19-MAR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-MAR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-MAR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-MAR-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4554812</b>							
<b>WG3003483-2</b>	<b>LCS</b>							
Ammonia as N			92.8		%		85-115	10-MAR-19
<b>WG3003483-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	10-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4552247</b>							
<b>WG3002755-2</b>	<b>LCS</b>							
Nitrite (as N)			102.5		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-MAR-19



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Nitrate (as N)			98.4		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-MAR-19
<b>OH-CL</b>	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-1</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	08-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4547308							
<b>WG3001337-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	06-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4545749							
<b>WG3000917-16</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.8		%		80-120	06-MAR-19
<b>WG3000917-15</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	08-MAR-19
<b>WG3002878-5</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	08-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4544147							
<b>WG2999497-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			94.4		%		80-120	05-MAR-19
<b>WG2999497-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Sulfate (SO4)			97.6		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	07-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4553796							
<b>WG3003011-5 LCS</b>								
Total Dissolved Solids			97.7		%		85-115	08-MAR-19
<b>WG3003011-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	08-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4552996							
<b>WG3002929-2 LCS</b>								
Total Kjeldahl Nitrogen			93.6		%		75-125	08-MAR-19
<b>WG3002929-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4559193							
<b>WG3003692-2 LCS</b>								
Total Suspended Solids			98.4		%		85-115	11-MAR-19
<b>WG3003692-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	11-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4547371							
<b>WG3001357-2 LCS</b>								
Turbidity			98.0		%		85-115	06-MAR-19
<b>WG3001357-1 MB</b>								
Turbidity			<0.10		NTU		0.1	06-MAR-19

# Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2239577

Report Date: 12-NOV-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	04-MAR-19 11:54	06-MAR-19 13:05	0.25	49	hours	EHTR-FM
	2	04-MAR-19 13:38	06-MAR-19 13:05	0.25	48	hours	EHTR-FM
pH	1	04-MAR-19 11:54	08-MAR-19 09:00	0.25	93	hours	EHTR-FM
	2	04-MAR-19 13:38	08-MAR-19 09:00	0.25	91	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2239577 were received on 05-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-03-04\_NP**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution			
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Excel	PDF	EDD
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Jennifer.Kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 2:	X	X	X
								Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	DL-Equis-GHO-Field@teck.com			
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	610 013		
Phone Number	250-865-3341			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	BOD	Filtered - F: Field, L: Lab, M: Field & Lab, N: None						
																N	N	N	N	N	N	
																NONE	H2SO4	NONE	HCL	NONE	NONE	HNO3



ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Francis		<i>[Signature]</i>	3/5 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	J. Francis	250 420 7941
Priority (2-3 business days) - 50% surcharge	<i>[Signature]</i>	2019/03/04
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

2°C



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 07-MAR-19  
Report Date: 12-NOV-19 16:21 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2241358  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 12:04  
RRR: Ultra-Trace Mercury was analyzed from RAW cut from Routine bottle due to Ultra-Trace Mercury bottle was not received.  
12-NOV-2019 Additional analysis for Bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-1 GH_GA-MW-2_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 11:25							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	260		5.0	mg/L		12-MAR-19	R4559449
Biochemical Oxygen Demand	<2.0		2.0	mg/L		07-MAR-19	R4559716
Carbonate (CO3)	<5.0		5.0	mg/L		12-MAR-19	R4559449
Dissolved Organic Carbon	0.75	DTC	0.50	mg/L		13-MAR-19	R4563387
Hydroxide (OH)	<5.0		5.0	mg/L		12-MAR-19	R4559449
Total Kjeldahl Nitrogen	0.235	TKNI	0.050	mg/L		11-MAR-19	R4561991
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		14-MAR-19	R4563670
Mercury (Hg)-Total	<0.00050	RRR	0.00050	ug/L		22-MAR-19	R4580009
Total Organic Carbon	0.52	DTC	0.50	mg/L		13-MAR-19	R4563387
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-MAR-19	11-MAR-19	R4556788
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4555949
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	12-MAR-19	14-MAR-19	R4563670
Dissolved Mercury Filtration Location	LAB					12-MAR-19	R4558787
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4555949
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-MAR-19	11-MAR-19	R4556788
Antimony (Sb)-Dissolved	0.00180		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Arsenic (As)-Dissolved	0.00029		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Barium (Ba)-Dissolved	0.0468		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788
Boron (B)-Dissolved	0.022		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Cadmium (Cd)-Dissolved	<0.060	DLM	0.060	ug/L	11-MAR-19	11-MAR-19	R4556788
Calcium (Ca)-Dissolved	138		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Cobalt (Co)-Dissolved	0.35		0.10	ug/L	11-MAR-19	11-MAR-19	R4556788
Copper (Cu)-Dissolved	0.00660		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788
Lithium (Li)-Dissolved	0.0182		0.0010	mg/L	11-MAR-19	11-MAR-19	R4556788
Magnesium (Mg)-Dissolved	40.3		0.10	mg/L	11-MAR-19	11-MAR-19	R4556788
Manganese (Mn)-Dissolved	0.0739		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Molybdenum (Mo)-Dissolved	0.0495		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788
Nickel (Ni)-Dissolved	0.00555		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Potassium (K)-Dissolved	1.16		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Selenium (Se)-Dissolved	18.4		0.050	ug/L	11-MAR-19	11-MAR-19	R4556788
Silicon (Si)-Dissolved	3.72		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Sodium (Na)-Dissolved	9.27		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Strontium (Sr)-Dissolved	0.559		0.00020	mg/L	11-MAR-19	11-MAR-19	R4556788
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Uranium (U)-Dissolved	0.00643		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Zinc (Zn)-Dissolved	0.0083		0.0010	mg/L	11-MAR-19	11-MAR-19	R4556788
<b>Hardness</b>							
Hardness (as CaCO3)	512		0.50	mg/L		11-MAR-19	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-1 GH_GA-MW-2_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 11:25							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		19-MAR-19	R4571992
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0373		0.0030	mg/L		19-MAR-19	R4571992
Antimony (Sb)-Total	0.00213		0.00010	mg/L		19-MAR-19	R4571992
Arsenic (As)-Total	0.00038		0.00010	mg/L		19-MAR-19	R4571992
Barium (Ba)-Total	0.0490		0.00010	mg/L		19-MAR-19	R4571992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Boron (B)-Total	0.022		0.010	mg/L		19-MAR-19	R4571992
Cadmium (Cd)-Total	<0.075	DLM	0.075	ug/L		19-MAR-19	R4571992
Calcium (Ca)-Total	138		0.050	mg/L		19-MAR-19	R4571992
Chromium (Cr)-Total	0.00025		0.00010	mg/L		19-MAR-19	R4571992
Cobalt (Co)-Total	1.81		0.10	ug/L		19-MAR-19	R4571992
Copper (Cu)-Total	0.0794		0.00050	mg/L		19-MAR-19	R4571992
Iron (Fe)-Total	0.052		0.010	mg/L		19-MAR-19	R4571992
Lead (Pb)-Total	0.000056		0.000050	mg/L		19-MAR-19	R4571992
Lithium (Li)-Total	0.0173		0.0010	mg/L		19-MAR-19	R4571992
Magnesium (Mg)-Total	37.5		0.10	mg/L		19-MAR-19	R4571992
Manganese (Mn)-Total	0.170		0.00010	mg/L		19-MAR-19	R4571992
Molybdenum (Mo)-Total	0.0479		0.000050	mg/L		19-MAR-19	R4571992
Nickel (Ni)-Total	0.00727		0.00050	mg/L		19-MAR-19	R4571992
Potassium (K)-Total	1.28		0.050	mg/L		19-MAR-19	R4571992
Selenium (Se)-Total	15.9		0.050	ug/L		19-MAR-19	R4571992
Silicon (Si)-Total	3.64		0.10	mg/L		19-MAR-19	R4571992
Silver (Ag)-Total	0.000120		0.000010	mg/L		19-MAR-19	R4571992
Sodium (Na)-Total	8.99		0.050	mg/L		19-MAR-19	R4571992
Strontium (Sr)-Total	0.542		0.00020	mg/L		19-MAR-19	R4571992
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		19-MAR-19	R4571992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Uranium (U)-Total	0.00673		0.000010	mg/L		19-MAR-19	R4571992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		19-MAR-19	R4571992
Zinc (Zn)-Total	0.0086		0.0030	mg/L		19-MAR-19	R4571992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.1		1.0	mg/L		13-MAR-19	R4562167
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	213		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Total (as CaCO3)	213		1.0	mg/L		12-MAR-19	R4559449
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0264		0.0050	mg/L		13-MAR-19	R4563747
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-MAR-19	R4564229
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.91		0.50	mg/L		14-MAR-19	R4564229
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	898		2.0	uS/cm		12-MAR-19	R4559449
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.106		0.020	mg/L		14-MAR-19	R4564229
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.3			%		19-MAR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-1 GH_GA-MW-2_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 11:25							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	10.6			meq/L		19-MAR-19	
Cation Sum	10.7			meq/L		19-MAR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		19-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	6.09	HTD	0.0050	mg/L		14-MAR-19	R4564229
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0864	HTD	0.0010	mg/L		14-MAR-19	R4564229
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		07-MAR-19	R4549807
<b>Oxidation redution potential by elect.</b>							
ORP	411		-1000	mV		12-MAR-19	R4559712
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0047		0.0020	mg/L		12-MAR-19	R4558569
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	274		0.30	mg/L		14-MAR-19	R4564229
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	656		20	mg/L		13-MAR-19	R4565448
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.2		1.0	mg/L		13-MAR-19	R4564428
<b>Turbidity</b>							
Turbidity	1.40		0.10	NTU		08-MAR-19	R4553372
<b>pH</b>							
pH	7.90		0.10	pH		12-MAR-19	R4559449
L2241358-2 GH_GA-MW-3_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 13:58							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	311		5.0	mg/L		12-MAR-19	R4559449
Biochemical Oxygen Demand	16.6	DLHC	6.0	mg/L		07-MAR-19	R4559716
Carbonate (CO3)	<5.0		5.0	mg/L		12-MAR-19	R4559449
Dissolved Organic Carbon	<0.50		0.50	mg/L		13-MAR-19	R4563387
Hydroxide (OH)	<5.0		5.0	mg/L		12-MAR-19	R4559449
Total Kjeldahl Nitrogen	0.47	DLM	0.20	mg/L		11-MAR-19	R4561991
Mercury (Hg)-Total	<0.000010	DLM	0.000010	mg/L		14-MAR-19	R4563670
Mercury (Hg)-Total	0.00055	RRR	0.00050	ug/L		22-MAR-19	R4580009
Total Organic Carbon	<0.50		0.50	mg/L		13-MAR-19	R4563387
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-MAR-19	11-MAR-19	R4556788
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4555949
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-19	14-MAR-19	R4563670
Dissolved Mercury Filtration Location	LAB					12-MAR-19	R4558787
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4555949
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-MAR-19	11-MAR-19	R4556788
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Barium (Ba)-Dissolved	0.0963		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-2 GH_GA-MW-3_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 13:58							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Boron (B)-Dissolved	0.289		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	11-MAR-19	11-MAR-19	R4556788
Calcium (Ca)-Dissolved	43.4		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	11-MAR-19	11-MAR-19	R4556788
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788
Lithium (Li)-Dissolved	0.0954		0.0010	mg/L	11-MAR-19	11-MAR-19	R4556788
Magnesium (Mg)-Dissolved	33.2		0.10	mg/L	11-MAR-19	11-MAR-19	R4556788
Manganese (Mn)-Dissolved	0.00812		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4556788
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Potassium (K)-Dissolved	2.41		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Selenium (Se)-Dissolved	1.33		0.050	ug/L	11-MAR-19	11-MAR-19	R4556788
Silicon (Si)-Dissolved	5.06		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Sodium (Na)-Dissolved	36.5		0.050	mg/L	11-MAR-19	11-MAR-19	R4556788
Strontium (Sr)-Dissolved	2.26		0.00020	mg/L	11-MAR-19	11-MAR-19	R4556788
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4556788
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4556788
Uranium (U)-Dissolved	0.000034		0.000010	mg/L	11-MAR-19	11-MAR-19	R4556788
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-MAR-19	11-MAR-19	R4556788
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	11-MAR-19	11-MAR-19	R4556788
<b>Hardness</b>							
Hardness (as CaCO3)	245		0.50	mg/L		11-MAR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		19-MAR-19	R4571992
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0250		0.0030	mg/L		19-MAR-19	R4573113
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Arsenic (As)-Total	0.00020		0.00010	mg/L		19-MAR-19	R4571992
Barium (Ba)-Total	0.0978		0.00010	mg/L		19-MAR-19	R4571992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Boron (B)-Total	0.293		0.010	mg/L		19-MAR-19	R4571992
Cadmium (Cd)-Total	0.0172		0.0050	ug/L		19-MAR-19	R4571992
Calcium (Ca)-Total	43.4		0.050	mg/L		19-MAR-19	R4571992
Chromium (Cr)-Total	0.00032		0.00010	mg/L		19-MAR-19	R4571992
Cobalt (Co)-Total	<0.10		0.10	ug/L		19-MAR-19	R4571992
Copper (Cu)-Total	0.0315		0.00050	mg/L		19-MAR-19	R4571992
Iron (Fe)-Total	0.119		0.010	mg/L		19-MAR-19	R4571992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Lithium (Li)-Total	0.0937		0.0010	mg/L		19-MAR-19	R4571992
Magnesium (Mg)-Total	31.0		0.10	mg/L		19-MAR-19	R4571992
Manganese (Mn)-Total	0.0104		0.00010	mg/L		19-MAR-19	R4571992
Molybdenum (Mo)-Total	0.000091		0.000050	mg/L		19-MAR-19	R4571992
Nickel (Ni)-Total	0.00086		0.00050	mg/L		19-MAR-19	R4571992
Potassium (K)-Total	2.67		0.050	mg/L		19-MAR-19	R4571992
Selenium (Se)-Total	8.32		0.050	ug/L		19-MAR-19	R4571992
Silicon (Si)-Total	5.09		0.10	mg/L		19-MAR-19	R4571992

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-2 GH_GA-MW-3_WG_2019-01-01_NP							
Sampled By: CLIENT on 06-MAR-19 @ 13:58							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Total	0.000011		0.000010	mg/L		20-MAR-19	R4573617
Sodium (Na)-Total	36.4		0.050	mg/L		19-MAR-19	R4571992
Strontium (Sr)-Total	2.14		0.00020	mg/L		19-MAR-19	R4571992
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		19-MAR-19	R4571992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Uranium (U)-Total	0.000047		0.000010	mg/L		19-MAR-19	R4571992
Vanadium (V)-Total	0.00051		0.00050	mg/L		19-MAR-19	R4571992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		19-MAR-19	R4571992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.5		1.0	mg/L		13-MAR-19	R4562167
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	255		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-MAR-19	R4559449
Alkalinity, Total (as CaCO3)	255		1.0	mg/L		12-MAR-19	R4559449
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.409	DLHC	0.050	mg/L		13-MAR-19	R4563747
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-MAR-19	R4564229
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.06		0.50	mg/L		14-MAR-19	R4564229
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	582		2.0	uS/cm		12-MAR-19	R4559449
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.654		0.020	mg/L		14-MAR-19	R4564229
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.0			%		20-MAR-19	
Anion Sum	7.11			meq/L		20-MAR-19	
Cation Sum	6.57			meq/L		20-MAR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	92.4		-100	%		20-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050	HTD	0.0050	mg/L		14-MAR-19	R4564229
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0014	HTD	0.0010	mg/L		14-MAR-19	R4564229
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0127		0.0010	mg/L		07-MAR-19	R4549807
<b>Oxidation redution potential by elect.</b>							
ORP	414		-1000	mV		12-MAR-19	R4559712
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0265		0.0020	mg/L		12-MAR-19	R4558569
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	87.0		0.30	mg/L		14-MAR-19	R4564229
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	354		20	mg/L		13-MAR-19	R4565448
<b>Total Suspended Solids</b>							
Total Suspended Solids	10.0		1.0	mg/L		13-MAR-19	R4564428
<b>Turbidity</b>							
Turbidity	39.3		0.10	NTU		08-MAR-19	R4553372
<b>pH</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241358-2    GH_GA-MW-3_WG_2019-01-01_NP Sampled By:    CLIENT on 06-MAR-19 @ 13:58 Matrix:        WG pH pH	7.60		0.10	pH		12-MAR-19	R4559449

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O <sub>2</sub> electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4562167</b>							
<b>WG3005470-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.2		%		85-115	13-MAR-19
<b>WG3005470-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	13-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559449</b>							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
Alkalinity, Total (as CaCO3)		255	254		mg/L	0.3	20	12-MAR-19
<b>WG3004899-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.4		%		85-115	12-MAR-19
<b>WG3004899-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003863-3</b>	<b>DUP</b>	<b>L2241358-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	11-MAR-19
<b>WG3003863-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			89.8		%		80-120	11-MAR-19
<b>WG3003863-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	11-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.8		%		80-120	19-MAR-19
<b>WG3008530-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-MAR-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559449</b>							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
Bicarbonate (HCO3)		311	310		mg/L	0.3	20	12-MAR-19
<b>WG3004899-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	12-MAR-19
<b>BOD-BC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559716</b>							
<b>WG3004985-5</b>	<b>LCS</b>							
Biochemical Oxygen Demand			104.3		%		85-115	07-MAR-19
<b>WG3004985-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BOD-BC-CL</b>		<b>Water</b>						
Batch	R4559716							
<b>WG3004985-4</b>	<b>MB</b>							
Biochemical Oxygen Demand			<2.0		mg/L		2	07-MAR-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4564229							
<b>WG3006422-11</b>	<b>LCS</b>							
Bromide (Br)			101.9		%		85-115	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Bromide (Br)			100.9		%		85-115	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Bromide (Br)			102.6		%		85-115	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4563387							
<b>WG3006189-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			91.2		%		80-120	13-MAR-19
<b>WG3006189-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-MAR-19
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4563387							
<b>WG3006189-2</b>	<b>LCS</b>							
Total Organic Carbon			97.5		%		80-120	13-MAR-19
<b>WG3006189-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-MAR-19
<b>CL-IC-N-CL</b>		<b>Water</b>						
Batch	R4564229							
<b>WG3006422-11</b>	<b>LCS</b>							
Chloride (Cl)			100.1		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-2</b>	<b>LCS</b>							
Chloride (Cl)			99.0		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4559449</b>							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	12-MAR-19
<b>WG3004899-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	12-MAR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4559449</b>							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
Conductivity (@ 25C)		582	582		uS/cm	0.0	10	12-MAR-19
<b>WG3004899-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.4		%		90-110	12-MAR-19
<b>WG3004899-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-MAR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Fluoride (F)			100.6		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Fluoride (F)			99.2		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Fluoride (F)			100.0		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Fluoride (F)			101.0		%		90-110	13-MAR-19





## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4563670</b>							
<b>WG3004749-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.5		%		80-120	14-MAR-19
<b>WG3004749-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-MAR-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4563670</b>							
<b>WG3006205-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.5		%		80-120	14-MAR-19
<b>WG3006205-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-MAR-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4580009</b>							
<b>WG3012656-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.2		%		80-120	22-MAR-19
<b>WG3012656-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	22-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003863-3</b>	<b>DUP</b>	<b>L2241358-1</b>						
Aluminum (Al)-Dissolved			<0.0030	RPD-NA	mg/L	N/A	20	11-MAR-19
Antimony (Sb)-Dissolved			0.00180		mg/L	3.1	20	11-MAR-19
Arsenic (As)-Dissolved			0.00029		mg/L	2.2	20	11-MAR-19
Barium (Ba)-Dissolved			0.0468		mg/L	2.3	20	11-MAR-19
Bismuth (Bi)-Dissolved			<0.000050	RPD-NA	mg/L	N/A	20	11-MAR-19
Boron (B)-Dissolved			0.022		mg/L	4.3	20	11-MAR-19
Cadmium (Cd)-Dissolved			<0.000060	RPD-NA	mg/L	N/A	20	11-MAR-19
Calcium (Ca)-Dissolved			138		mg/L	2.6	20	11-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003863-3</b>	<b>DUP</b>	<b>L2241358-1</b>						
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAR-19
Cobalt (Co)-Dissolved		0.00035	0.00036		mg/L	2.8	20	11-MAR-19
Copper (Cu)-Dissolved		0.00660	0.00662		mg/L	0.3	20	11-MAR-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-MAR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAR-19
Lithium (Li)-Dissolved		0.0182	0.0179		mg/L	1.8	20	11-MAR-19
Magnesium (Mg)-Dissolved		40.3	39.7		mg/L	1.7	20	11-MAR-19
Manganese (Mn)-Dissolved		0.0739	0.0739		mg/L	0.1	20	11-MAR-19
Molybdenum (Mo)-Dissolved		0.0495	0.0504		mg/L	2.0	20	11-MAR-19
Nickel (Ni)-Dissolved		0.00555	0.00571		mg/L	2.9	20	11-MAR-19
Potassium (K)-Dissolved		1.16	1.17		mg/L	1.1	20	11-MAR-19
Selenium (Se)-Dissolved		0.0184	0.0179		mg/L	2.6	20	11-MAR-19
Silicon (Si)-Dissolved		3.72	3.62		mg/L	2.7	20	11-MAR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-MAR-19
Sodium (Na)-Dissolved		9.27	9.07		mg/L	2.2	20	11-MAR-19
Strontium (Sr)-Dissolved		0.559	0.572		mg/L	2.3	20	11-MAR-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-MAR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAR-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-MAR-19
Uranium (U)-Dissolved		0.00643	0.00645		mg/L	0.3	20	11-MAR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAR-19
Zinc (Zn)-Dissolved		0.0083	0.0081		mg/L	2.4	20	11-MAR-19
<b>WG3003863-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.2		%		80-120	11-MAR-19
Antimony (Sb)-Dissolved			95.9		%		80-120	11-MAR-19
Arsenic (As)-Dissolved			91.8		%		80-120	11-MAR-19
Barium (Ba)-Dissolved			98.8		%		80-120	11-MAR-19
Bismuth (Bi)-Dissolved			92.4		%		80-120	11-MAR-19
Boron (B)-Dissolved			90.9		%		80-120	11-MAR-19
Cadmium (Cd)-Dissolved			91.2		%		80-120	11-MAR-19
Calcium (Ca)-Dissolved			91.2		%		80-120	11-MAR-19
Chromium (Cr)-Dissolved			93.0		%		80-120	11-MAR-19
Cobalt (Co)-Dissolved			92.8		%		80-120	11-MAR-19
Copper (Cu)-Dissolved			92.8		%		80-120	11-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003863-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			92.6		%		80-120	11-MAR-19
Lead (Pb)-Dissolved			94.1		%		80-120	11-MAR-19
Lithium (Li)-Dissolved			88.3		%		80-120	11-MAR-19
Magnesium (Mg)-Dissolved			99.5		%		80-120	11-MAR-19
Manganese (Mn)-Dissolved			96.0		%		80-120	11-MAR-19
Molybdenum (Mo)-Dissolved			98.1		%		80-120	11-MAR-19
Nickel (Ni)-Dissolved			91.4		%		80-120	11-MAR-19
Potassium (K)-Dissolved			92.0		%		80-120	11-MAR-19
Selenium (Se)-Dissolved			91.5		%		80-120	11-MAR-19
Silicon (Si)-Dissolved			103.3		%		60-140	11-MAR-19
Silver (Ag)-Dissolved			95.1		%		80-120	11-MAR-19
Sodium (Na)-Dissolved			95.4		%		80-120	11-MAR-19
Strontium (Sr)-Dissolved			97.4		%		80-120	11-MAR-19
Thallium (Tl)-Dissolved			92.9		%		80-120	11-MAR-19
Tin (Sn)-Dissolved			94.2		%		80-120	11-MAR-19
Titanium (Ti)-Dissolved			93.0		%		80-120	11-MAR-19
Uranium (U)-Dissolved			94.0		%		80-120	11-MAR-19
Vanadium (V)-Dissolved			95.7		%		80-120	11-MAR-19
Zinc (Zn)-Dissolved			88.0		%		80-120	11-MAR-19
<b>WG3003863-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003863-1</b>	<b>MB</b>	<b>LF</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.8		%		80-120	19-MAR-19
Antimony (Sb)-Total			100.9		%		80-120	19-MAR-19
Arsenic (As)-Total			96.2		%		80-120	19-MAR-19
Barium (Ba)-Total			94.6		%		80-120	19-MAR-19
Bismuth (Bi)-Total			94.2		%		80-120	19-MAR-19
Boron (B)-Total			98.9		%		80-120	19-MAR-19
Cadmium (Cd)-Total			99.3		%		80-120	19-MAR-19
Calcium (Ca)-Total			100.1		%		80-120	19-MAR-19
Chromium (Cr)-Total			97.5		%		80-120	19-MAR-19
Cobalt (Co)-Total			97.8		%		80-120	19-MAR-19
Copper (Cu)-Total			96.4		%		80-120	19-MAR-19
Iron (Fe)-Total			94.2		%		80-120	19-MAR-19
Lead (Pb)-Total			97.8		%		80-120	19-MAR-19
Lithium (Li)-Total			98.0		%		80-120	19-MAR-19
Magnesium (Mg)-Total			96.1		%		80-120	19-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2 LCS</b>								
Manganese (Mn)-Total			96.6		%		80-120	19-MAR-19
Molybdenum (Mo)-Total			96.6		%		80-120	19-MAR-19
Nickel (Ni)-Total			96.3		%		80-120	19-MAR-19
Potassium (K)-Total			102.1		%		80-120	19-MAR-19
Selenium (Se)-Total			94.9		%		80-120	19-MAR-19
Silicon (Si)-Total			96.9		%		80-120	19-MAR-19
Silver (Ag)-Total			94.0		%		80-120	19-MAR-19
Sodium (Na)-Total			97.7		%		80-120	19-MAR-19
Strontium (Sr)-Total			98.2		%		80-120	19-MAR-19
Thallium (Tl)-Total			95.6		%		80-120	19-MAR-19
Tin (Sn)-Total			96.8		%		80-120	19-MAR-19
Titanium (Ti)-Total			96.2		%		80-120	19-MAR-19
Uranium (U)-Total			98.2		%		80-120	19-MAR-19
Vanadium (V)-Total			99.0		%		80-120	19-MAR-19
Zinc (Zn)-Total			97.1		%		80-120	19-MAR-19
<b>WG3008530-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-MAR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Boron (B)-Total			<0.010		mg/L		0.01	19-MAR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	19-MAR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-MAR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	19-MAR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-MAR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-MAR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-1</b>	<b>MB</b>							
Potassium (K)-Total			<0.050		mg/L		0.05	19-MAR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	19-MAR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	19-MAR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-MAR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-MAR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-MAR-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4563747</b>							
<b>WG3006279-6</b>	<b>LCS</b>							
Ammonia as N			98.5		%		85-115	13-MAR-19
<b>WG3006279-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Nitrite (as N)			101.0		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Nitrite (as N)			100.2		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4564229							
<b>WG3006422-11</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Nitrate (as N)			98.8		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Nitrate (as N)			98.9		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Nitrate (as N)			99.4		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>OH-CL</b>								
<b>Water</b>								
Batch	R4559449							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	12-MAR-19
<b>WG3004899-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	12-MAR-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4559712							
<b>WG3004936-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	12-MAR-19
<b>WG3004936-8</b>	<b>DUP</b>	<b>L2241358-2</b>						
ORP		414	418	J	mV	4.7	15	12-MAR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4558569							
<b>WG3004693-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.3		%		80-120	12-MAR-19
<b>WG3004693-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAR-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4559449</b>							
<b>WG3004899-6</b>	<b>DUP</b>	<b>L2241358-2</b>						
pH		7.60	7.62	J	pH	0.02	0.2	12-MAR-19
<b>WG3004899-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	12-MAR-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4549807</b>							
<b>WG3001960-35</b>	<b>DUP</b>	<b>L2241358-2</b>						
Orthophosphate-Dissolved (as P)		0.0127	0.0129		mg/L	1.8	20	07-MAR-19
<b>WG3001960-34</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			105.0		%		80-120	07-MAR-19
<b>WG3001960-33</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAR-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564229</b>							
<b>WG3006422-11</b>	<b>LCS</b>							
Sulfate (SO4)			100.9		%		90-110	13-MAR-19
<b>WG3006422-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.5		%		90-110	13-MAR-19
<b>WG3006422-5</b>	<b>LCS</b>							
Sulfate (SO4)			100.2		%		90-110	13-MAR-19
<b>WG3006422-8</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	13-MAR-19
<b>WG3006422-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-10</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-4</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3006422-7</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4565448</b>							
<b>WG3005351-5</b>	<b>LCS</b>							
Total Dissolved Solids			106.5		%		85-115	13-MAR-19
<b>WG3005351-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	13-MAR-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4561991</b>							
<b>WG3004758-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.6		%		75-125	11-MAR-19
<b>WG3004758-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.5		%		75-125	11-MAR-19
<b>WG3004758-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.9		%		75-125	11-MAR-19
<b>WG3004758-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.9		%		75-125	11-MAR-19
<b>WG3004758-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.5		%		75-125	11-MAR-19
<b>WG3004758-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4564428</b>							
<b>WG3005348-4</b>	<b>LCS</b>							
Total Suspended Solids			102.4		%		85-115	13-MAR-19
<b>WG3005348-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-MAR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4553372</b>							
<b>WG3002992-11</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	08-MAR-19
<b>WG3002992-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-MAR-19

# Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2241358

Report Date: 12-NOV-19

Page 14 of 14

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	06-MAR-19 11:25	12-MAR-19 11:00	0.25	144	hours	EHTR-FM
	2	06-MAR-19 13:58	12-MAR-19 11:00	0.25	141	hours	EHTR-FM
pH	1	06-MAR-19 11:25	12-MAR-19 09:00	0.25	142	hours	EHTR-FM
	2	06-MAR-19 13:58	12-MAR-19 09:00	0.25	139	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	1	06-MAR-19 11:25	14-MAR-19 16:48	3	8	days	EHT
	2	06-MAR-19 13:58	14-MAR-19 16:48	3	8	days	EHT
Nitrite in Water by IC (Low Level)	1	06-MAR-19 11:25	14-MAR-19 16:48	3	8	days	EHT
	2	06-MAR-19 13:58	14-MAR-19 16:48	3	8	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2241358 were received on 07-MAR-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Jennifer.Kropp@teck.com	X	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-3341			Phone Number	403 407 1794							

SAMPLE DETAILS							ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	BOD	Filtered: F; Field, L; Lab, FL; Field & Lab, N; None				



L2241358-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/7/19

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name		Mobile #	
Sampler's Signature		Date/Time	



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 08-MAR-19  
Report Date: 12-NOV-19 17:01 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2241728  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 12:20  
RRR: Ultra-Trace Mercury was analyzed from RAW cut from Routine bottle due to Ultra-Trace Mercury bottle was not received.  
12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241728-1 GH_MW-ERSC-1_WG_2019-01-01_NP							
Sampled By: CLIENT on 07-MAR-19 @ 11:45							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	243		5.0	mg/L		13-MAR-19	R4561649
Carbonate (CO3)	<5.0		5.0	mg/L		13-MAR-19	R4561649
Dissolved Organic Carbon	0.68		0.50	mg/L		14-MAR-19	R4566407
Hydroxide (OH)	<5.0		5.0	mg/L		13-MAR-19	R4561649
Total Kjeldahl Nitrogen	0.137	TKNI	0.050	mg/L		12-MAR-19	R4560867
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		14-MAR-19	R4563670
Mercury (Hg)-Total	<0.00050	RRR	0.00050	ug/L		21-MAR-19	R4577490
Total Organic Carbon	0.68		0.50	mg/L		14-MAR-19	R4566407
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	11-MAR-19	11-MAR-19	R4557990
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4556711
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-MAR-19	14-MAR-19	R4563670
Dissolved Mercury Filtration Location	LAB					12-MAR-19	R4558787
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					11-MAR-19	R4556711
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	11-MAR-19	11-MAR-19	R4557990
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Barium (Ba)-Dissolved	0.210		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4557990
Boron (B)-Dissolved	0.012		0.010	mg/L	11-MAR-19	11-MAR-19	R4557990
Cadmium (Cd)-Dissolved	0.0662		0.0050	ug/L	11-MAR-19	11-MAR-19	R4557990
Calcium (Ca)-Dissolved	164		0.050	mg/L	11-MAR-19	11-MAR-19	R4557990
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	11-MAR-19	11-MAR-19	R4557990
Copper (Cu)-Dissolved	0.00216		0.00050	mg/L	11-MAR-19	11-MAR-19	R4557990
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4557990
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	11-MAR-19	11-MAR-19	R4557990
Lithium (Li)-Dissolved	0.0149		0.0010	mg/L	11-MAR-19	11-MAR-19	R4557990
Magnesium (Mg)-Dissolved	71.7		0.10	mg/L	11-MAR-19	11-MAR-19	R4557990
Manganese (Mn)-Dissolved	0.00629		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Molybdenum (Mo)-Dissolved	0.00129		0.000050	mg/L	11-MAR-19	11-MAR-19	R4557990
Nickel (Ni)-Dissolved	0.00110		0.00050	mg/L	11-MAR-19	11-MAR-19	R4557990
Potassium (K)-Dissolved	1.08		0.050	mg/L	11-MAR-19	11-MAR-19	R4557990
Selenium (Se)-Dissolved	73.2		0.050	ug/L	11-MAR-19	11-MAR-19	R4557990
Silicon (Si)-Dissolved	2.68		0.050	mg/L	11-MAR-19	11-MAR-19	R4557990
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	11-MAR-19	11-MAR-19	R4557990
Sodium (Na)-Dissolved	7.02		0.050	mg/L	11-MAR-19	11-MAR-19	R4557990
Strontium (Sr)-Dissolved	0.592		0.00020	mg/L	11-MAR-19	11-MAR-19	R4557990
Thallium (Tl)-Dissolved	0.000030		0.000010	mg/L	11-MAR-19	11-MAR-19	R4557990
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	11-MAR-19	11-MAR-19	R4557990
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	11-MAR-19	11-MAR-19	R4557990
Uranium (U)-Dissolved	0.00184		0.000010	mg/L	11-MAR-19	11-MAR-19	R4557990
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	11-MAR-19	11-MAR-19	R4557990
Zinc (Zn)-Dissolved	0.0026		0.0010	mg/L	11-MAR-19	11-MAR-19	R4557990
<b>Hardness</b>							
Hardness (as CaCO3)	705		0.50	mg/L		12-MAR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241728-1 GH_MW-ERSC-1_WG_2019-01-01_NP							
Sampled By: CLIENT on 07-MAR-19 @ 11:45							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		19-MAR-19	R4571992
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0207		0.0030	mg/L		19-MAR-19	R4573113
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Arsenic (As)-Total	0.00024		0.00010	mg/L		19-MAR-19	R4571992
Barium (Ba)-Total	0.197		0.00010	mg/L		19-MAR-19	R4571992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Boron (B)-Total	0.013		0.010	mg/L		19-MAR-19	R4571992
Cadmium (Cd)-Total	0.0669		0.0050	ug/L		19-MAR-19	R4571992
Calcium (Ca)-Total	162		0.050	mg/L		19-MAR-19	R4571992
Chromium (Cr)-Total	0.00036		0.00010	mg/L		19-MAR-19	R4571992
Cobalt (Co)-Total	<0.10		0.10	ug/L		19-MAR-19	R4571992
Copper (Cu)-Total	0.00375		0.00050	mg/L		19-MAR-19	R4571992
Iron (Fe)-Total	0.061		0.010	mg/L		19-MAR-19	R4571992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4571992
Lithium (Li)-Total	0.0142		0.0010	mg/L		19-MAR-19	R4571992
Magnesium (Mg)-Total	63.7		0.10	mg/L		19-MAR-19	R4571992
Manganese (Mn)-Total	0.00835		0.00010	mg/L		19-MAR-19	R4571992
Molybdenum (Mo)-Total	0.00130		0.000050	mg/L		19-MAR-19	R4571992
Nickel (Ni)-Total	0.00114		0.00050	mg/L		19-MAR-19	R4571992
Potassium (K)-Total	1.14		0.050	mg/L		19-MAR-19	R4571992
Selenium (Se)-Total	64.4		0.050	ug/L		19-MAR-19	R4571992
Silicon (Si)-Total	2.79		0.10	mg/L		19-MAR-19	R4571992
Silver (Ag)-Total	<0.000010		0.000010	mg/L		19-MAR-19	R4571992
Sodium (Na)-Total	6.77		0.050	mg/L		19-MAR-19	R4571992
Strontium (Sr)-Total	0.564		0.00020	mg/L		19-MAR-19	R4571992
Thallium (Tl)-Total	0.000030		0.000010	mg/L		19-MAR-19	R4571992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		19-MAR-19	R4571992
Titanium (Ti)-Total	<0.010		0.010	mg/L		19-MAR-19	R4571992
Uranium (U)-Total	0.00194		0.000010	mg/L		19-MAR-19	R4571992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		19-MAR-19	R4571992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		19-MAR-19	R4571992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.5		1.0	mg/L		13-MAR-19	R4562167
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	199		1.0	mg/L		13-MAR-19	R4561649
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-MAR-19	R4561649
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-MAR-19	R4561649
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		13-MAR-19	R4561649
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0207		0.0050	mg/L		13-MAR-19	R4563772
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		12-MAR-19	R4558317
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.0	DLHC	2.5	mg/L		12-MAR-19	R4558317
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1200		2.0	uS/cm		13-MAR-19	R4561649
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		12-MAR-19	R4558317
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		20-MAR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241728-1 GH_MW-ERSC-1_WG_2019-01-01_NP							
Sampled By: CLIENT on 07-MAR-19 @ 11:45							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	14.3			meq/L		20-MAR-19	
Cation Sum	14.4			meq/L		20-MAR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		20-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	13.5	HTD	0.025	mg/L		12-MAR-19	R4558317
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0054	HTD	0.0050	mg/L		12-MAR-19	R4558317
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		08-MAR-19	R4553449
<b>Oxidation redution potential by elect.</b>							
ORP	462		-1000	mV		13-MAR-19	R4562807
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0218		0.0020	mg/L		12-MAR-19	R4558569
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	440	DLHC	1.5	mg/L		12-MAR-19	R4558317
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	934		20	mg/L		14-MAR-19	R4567763
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.5		1.0	mg/L		14-MAR-19	R4567677
<b>Turbidity</b>							
Turbidity	1.93		0.10	NTU		08-MAR-19	R4553372
<b>pH</b>							
pH	7.79		0.10	pH		13-MAR-19	R4561649

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 1 of 13

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4562167							
<b>WG3005470-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.2		%		85-115	13-MAR-19
<b>WG3005470-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	13-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.6		%		85-115	13-MAR-19
<b>WG3005546-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4557990							
<b>WG3004071-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	11-MAR-19
<b>WG3004071-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	11-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4571992							
<b>WG3008530-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.8		%		80-120	19-MAR-19
<b>WG3008530-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	19-MAR-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-10</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4558317							
<b>WG3004569-12</b>	<b>LCS</b>							
Bromide (Br)			100.3		%		85-115	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Bromide (Br)			107.5		%		85-115	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Bromide (Br)			101.2		%		85-115	12-MAR-19



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4566407</b>							
<b>WG3006985-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.6		%		80-120	14-MAR-19
<b>WG3006985-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-MAR-19
<b>WG3006985-12</b>	<b>MS</b>	<b>L2241728-1</b>						
Dissolved Organic Carbon			91.5		%		70-130	14-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4566407</b>							
<b>WG3006985-10</b>	<b>LCS</b>							
Total Organic Carbon			101.9		%		80-120	14-MAR-19
<b>WG3006985-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-MAR-19
<b>WG3006985-12</b>	<b>MS</b>	<b>L2241728-1</b>						
Total Organic Carbon			91.2		%		70-130	14-MAR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Chloride (Cl)			98.1		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Chloride (Cl)			99.0		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Chloride (Cl)			97.7		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Chloride (Cl)			98.1		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4558317							
<b>WG3004569-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-10</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	13-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	13-MAR-19
<b>WG3005546-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4558317							
<b>WG3004569-12</b>	<b>LCS</b>							
Fluoride (F)			98.2		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Fluoride (F)			98.8		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Fluoride (F)			90.7		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Fluoride (F)			97.9		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4563670							
<b>WG3004749-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.5		%		80-120	14-MAR-19
<b>WG3004749-1</b>	<b>MB</b>	<b>LF</b>						



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4563670							
<b>WG3004749-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-MAR-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch	R4563670							
<b>WG3006205-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.5		%		80-120	14-MAR-19
<b>WG3006205-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	14-MAR-19
<b>HG-T-U-CVAF-VA</b> <b>Water</b>								
Batch	R4577490							
<b>WG3011538-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.0		%		80-120	21-MAR-19
<b>WG3011538-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-MAR-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch	R4557990							
<b>WG3004071-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.2		%		80-120	11-MAR-19
Antimony (Sb)-Dissolved			96.2		%		80-120	11-MAR-19
Arsenic (As)-Dissolved			94.6		%		80-120	11-MAR-19
Barium (Ba)-Dissolved			96.4		%		80-120	11-MAR-19
Bismuth (Bi)-Dissolved			95.7		%		80-120	11-MAR-19
Boron (B)-Dissolved			98.5		%		80-120	11-MAR-19
Cadmium (Cd)-Dissolved			97.1		%		80-120	11-MAR-19
Calcium (Ca)-Dissolved			93.7		%		80-120	11-MAR-19
Chromium (Cr)-Dissolved			97.7		%		80-120	11-MAR-19
Cobalt (Co)-Dissolved			97.4		%		80-120	11-MAR-19
Copper (Cu)-Dissolved			95.0		%		80-120	11-MAR-19
Iron (Fe)-Dissolved			95.5		%		80-120	11-MAR-19
Lead (Pb)-Dissolved			94.8		%		80-120	11-MAR-19
Lithium (Li)-Dissolved			97.8		%		80-120	11-MAR-19
Magnesium (Mg)-Dissolved			100.6		%		80-120	11-MAR-19
Manganese (Mn)-Dissolved			97.4		%		80-120	11-MAR-19
Molybdenum (Mo)-Dissolved			97.4		%		80-120	11-MAR-19
Nickel (Ni)-Dissolved			96.9		%		80-120	11-MAR-19





## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4557990</b>							
<b>WG3004071-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			95.0		%		80-120	11-MAR-19
Selenium (Se)-Dissolved			99.5		%		80-120	11-MAR-19
Silicon (Si)-Dissolved			103.3		%		60-140	11-MAR-19
Silver (Ag)-Dissolved			98.3		%		80-120	11-MAR-19
Sodium (Na)-Dissolved			101.9		%		80-120	11-MAR-19
Strontium (Sr)-Dissolved			96.8		%		80-120	11-MAR-19
Thallium (Tl)-Dissolved			93.8		%		80-120	11-MAR-19
Tin (Sn)-Dissolved			96.3		%		80-120	11-MAR-19
Titanium (Ti)-Dissolved			99.1		%		80-120	11-MAR-19
Uranium (U)-Dissolved			83.2		%		80-120	11-MAR-19
Vanadium (V)-Dissolved			100.4		%		80-120	11-MAR-19
Zinc (Zn)-Dissolved			95.1		%		80-120	11-MAR-19
<b>WG3004071-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-MAR-19



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4557990</b>							
<b>WG3004071-1</b>	<b>MB</b>	<b>LF</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.8		%		80-120	19-MAR-19
Antimony (Sb)-Total			100.9		%		80-120	19-MAR-19
Arsenic (As)-Total			96.2		%		80-120	19-MAR-19
Barium (Ba)-Total			94.6		%		80-120	19-MAR-19
Bismuth (Bi)-Total			94.2		%		80-120	19-MAR-19
Boron (B)-Total			98.9		%		80-120	19-MAR-19
Cadmium (Cd)-Total			99.3		%		80-120	19-MAR-19
Calcium (Ca)-Total			100.1		%		80-120	19-MAR-19
Chromium (Cr)-Total			97.5		%		80-120	19-MAR-19
Cobalt (Co)-Total			97.8		%		80-120	19-MAR-19
Copper (Cu)-Total			96.4		%		80-120	19-MAR-19
Iron (Fe)-Total			94.2		%		80-120	19-MAR-19
Lead (Pb)-Total			97.8		%		80-120	19-MAR-19
Lithium (Li)-Total			98.0		%		80-120	19-MAR-19
Magnesium (Mg)-Total			96.1		%		80-120	19-MAR-19
Manganese (Mn)-Total			96.6		%		80-120	19-MAR-19
Molybdenum (Mo)-Total			96.6		%		80-120	19-MAR-19
Nickel (Ni)-Total			96.3		%		80-120	19-MAR-19
Potassium (K)-Total			102.1		%		80-120	19-MAR-19
Selenium (Se)-Total			94.9		%		80-120	19-MAR-19
Silicon (Si)-Total			96.9		%		80-120	19-MAR-19
Silver (Ag)-Total			94.0		%		80-120	19-MAR-19



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-2 LCS</b>								
Sodium (Na)-Total			97.7		%		80-120	19-MAR-19
Strontium (Sr)-Total			98.2		%		80-120	19-MAR-19
Thallium (Tl)-Total			95.6		%		80-120	19-MAR-19
Tin (Sn)-Total			96.8		%		80-120	19-MAR-19
Titanium (Ti)-Total			96.2		%		80-120	19-MAR-19
Uranium (U)-Total			98.2		%		80-120	19-MAR-19
Vanadium (V)-Total			99.0		%		80-120	19-MAR-19
Zinc (Zn)-Total			97.1		%		80-120	19-MAR-19
<b>WG3008530-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-MAR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Boron (B)-Total			<0.010		mg/L		0.01	19-MAR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	19-MAR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-MAR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	19-MAR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-MAR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-MAR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Potassium (K)-Total			<0.050		mg/L		0.05	19-MAR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-MAR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	19-MAR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	19-MAR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-MAR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-MAR-19



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3008530-1</b>	<b>MB</b>							
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-MAR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-MAR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-MAR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-MAR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4563772</b>							
<b>WG3006312-11</b>	<b>DUP</b>	<b>L2241728-1</b>						
Ammonia as N		0.0207	0.0228		mg/L	9.7	20	13-MAR-19
<b>WG3006312-10</b>	<b>LCS</b>							
Ammonia as N			100.2		%		85-115	13-MAR-19
<b>WG3006312-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3006312-12</b>	<b>MS</b>	<b>L2241728-1</b>						
Ammonia as N			112.2		%		75-125	13-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Nitrite (as N)			100.8		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Nitrite (as N)			101.1		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4558317							
<b>WG3004569-12</b>	<b>LCS</b>							
Nitrate (as N)			97.6		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Nitrate (as N)			98.8		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Nitrate (as N)			97.4		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Nitrate (as N)			97.9		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>OH-CL</b>	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-10</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	13-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4562807							
<b>WG3005942-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	13-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4558569							
<b>WG3004693-8</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.6		%		80-120	12-MAR-19
<b>WG3004693-7</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4561649							
<b>WG3005546-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	13-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4553449							
<b>WG3003016-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.6		%		80-120	08-MAR-19
<b>WG3003016-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-MAR-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4558317							
<b>WG3004569-12</b>	<b>LCS</b>							
Sulfate (SO4)			101.0		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.5		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4567763							
<b>WG3006261-2</b>	<b>LCS</b>							
Total Dissolved Solids			100.9		%		85-115	14-MAR-19
<b>WG3006261-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	14-MAR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4560867							
<b>WG3004594-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	12-MAR-19
<b>WG3004594-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4567677							
<b>WG3006296-2 LCS</b>								
Total Suspended Solids			113.3		%		85-115	14-MAR-19
<b>WG3006296-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	14-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4553372							
<b>WG3002992-17 LCS</b>								
Turbidity			96.0		%		85-115	08-MAR-19
<b>WG3002992-16 MB</b>								
Turbidity			<0.10		NTU		0.1	08-MAR-19

# Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate



# Quality Control Report

Workorder: L2241728

Report Date: 12-NOV-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	07-MAR-19 11:45	13-MAR-19 14:45	0.25	147	hours	EHTR-FM
pH	1	07-MAR-19 11:45	13-MAR-19 09:00	0.25	141	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	1	07-MAR-19 11:45	12-MAR-19 11:29	3	5	days	EHT
Nitrite in Water by IC (Low Level)	1	07-MAR-19 11:45	12-MAR-19 11:29	3	5	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2241728 were received on 08-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Jennifer.Kropp@teck.com	X	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equis-GHO-Field@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610 013			
Postal Code	V0B1H0			Postal Code	T1Y 7B5							
Country	Canada			Country	Canada							
Phone Number	250-865-3341			Phone Number	403 407 1794							

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	Filter
GH_MW-ERSC-1_WG_2019-01-01_NP	GH_MW-ERSC-1	WG		2019/03/07	11:45	G	6	1	1	1	1	1	1		N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N
						G									N

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/8/19

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>		
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature	Date/Time
	<i>[Signature]</i>	



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 13-MAR-19  
Report Date: 12-NOV-19 17:03 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2243839  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 11:03  
RRR: Total Ultra Trace Mercury sub-sampled at laboratory from Routine bottle.  
12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and  
hydroxide (as OH).

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2243839-1 GH_MW-TD_WG_2019-01-01_NP							
Sampled By: CLIENT on 12-MAR-19 @ 11:20							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	417		5.0	mg/L		16-MAR-19	R4568113
Biochemical Oxygen Demand	<2.0		2.0	mg/L		13-MAR-19	R4568631
Carbonate (CO3)	<5.0		5.0	mg/L		16-MAR-19	R4568113
Dissolved Organic Carbon	0.53		0.50	mg/L		18-MAR-19	R4570187
Hydroxide (OH)	<5.0		5.0	mg/L		16-MAR-19	R4568113
Total Kjeldahl Nitrogen	0.108		0.050	mg/L		18-MAR-19	R4570447
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		19-MAR-19	R4570191
Mercury (Hg)-Total	<0.00050	RRR	0.00050	ug/L		20-MAR-19	R4573515
Total Organic Carbon	0.59		0.50	mg/L		18-MAR-19	R4570187
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	19-MAR-19	19-MAR-19	R4571992
Dissolved Metals Filtration Location	FIELD					19-MAR-19	R4571548
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	15-MAR-19	19-MAR-19	R4570191
Dissolved Mercury Filtration Location	FIELD					15-MAR-19	R4567860
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					20-MAR-19	R4572795
Dissolved Metals Filtration Location	FIELD					19-MAR-19	R4571548
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	19-MAR-19	19-MAR-19	R4571992
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	19-MAR-19	19-MAR-19	R4571992
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	19-MAR-19	19-MAR-19	R4571992
Barium (Ba)-Dissolved	0.0213		0.00010	mg/L	19-MAR-19	19-MAR-19	R4571992
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	19-MAR-19	19-MAR-19	R4571992
Boron (B)-Dissolved	0.356		0.010	mg/L	19-MAR-19	19-MAR-19	R4571992
Cadmium (Cd)-Dissolved	0.203		0.0050	ug/L	19-MAR-19	19-MAR-19	R4571992
Calcium (Ca)-Dissolved	85.0		0.050	mg/L	19-MAR-19	19-MAR-19	R4571992
Chromium (Cr)-Dissolved	0.00041	DTC	0.00010	mg/L	20-MAR-19	20-MAR-19	R4573617
Cobalt (Co)-Dissolved	0.42		0.10	ug/L	19-MAR-19	19-MAR-19	R4571992
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	19-MAR-19	19-MAR-19	R4571992
Iron (Fe)-Dissolved	0.271		0.010	mg/L	19-MAR-19	19-MAR-19	R4571992
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	19-MAR-19	19-MAR-19	R4571992
Lithium (Li)-Dissolved	0.0400		0.0010	mg/L	19-MAR-19	19-MAR-19	R4571992
Magnesium (Mg)-Dissolved	31.0		0.10	mg/L	19-MAR-19	19-MAR-19	R4571992
Manganese (Mn)-Dissolved	0.653		0.00010	mg/L	19-MAR-19	19-MAR-19	R4571992
Molybdenum (Mo)-Dissolved	0.00285		0.000050	mg/L	19-MAR-19	19-MAR-19	R4571992
Nickel (Ni)-Dissolved	0.00091		0.00050	mg/L	19-MAR-19	19-MAR-19	R4571992
Potassium (K)-Dissolved	2.30		0.050	mg/L	19-MAR-19	19-MAR-19	R4571992
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	19-MAR-19	19-MAR-19	R4571992
Silicon (Si)-Dissolved	6.21		0.050	mg/L	19-MAR-19	19-MAR-19	R4571992
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	19-MAR-19	19-MAR-19	R4571992
Sodium (Na)-Dissolved	27.1		0.050	mg/L	19-MAR-19	19-MAR-19	R4571992
Strontium (Sr)-Dissolved	1.06		0.00020	mg/L	19-MAR-19	19-MAR-19	R4571992
Thallium (Tl)-Dissolved	0.000179		0.000010	mg/L	19-MAR-19	19-MAR-19	R4571992
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	19-MAR-19	19-MAR-19	R4571992
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	19-MAR-19	19-MAR-19	R4571992
Uranium (U)-Dissolved	0.00107		0.000010	mg/L	19-MAR-19	19-MAR-19	R4571992
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	19-MAR-19	19-MAR-19	R4571992
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	19-MAR-19	19-MAR-19	R4571992
<b>Hardness</b>							
Hardness (as CaCO3)	340		0.50	mg/L		20-MAR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2243839-1 GH_MW-TD_WG_2019-01-01_NP							
Sampled By: CLIENT on 12-MAR-19 @ 11:20							
Matrix: WG							
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-MAR-19	R4569447
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-MAR-19	R4569447
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-MAR-19	R4569447
Arsenic (As)-Total	0.00013		0.00010	mg/L		18-MAR-19	R4569447
Barium (Ba)-Total	0.0221		0.00010	mg/L		18-MAR-19	R4569447
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-MAR-19	R4569447
Boron (B)-Total	0.361		0.010	mg/L		18-MAR-19	R4569447
Cadmium (Cd)-Total	0.451		0.0050	ug/L		18-MAR-19	R4569447
Calcium (Ca)-Total	83.8		0.050	mg/L		18-MAR-19	R4569447
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		18-MAR-19	R4569447
Cobalt (Co)-Total	0.45		0.10	ug/L		18-MAR-19	R4569447
Copper (Cu)-Total	<0.00050		0.00050	mg/L		18-MAR-19	R4569447
Iron (Fe)-Total	0.255		0.010	mg/L		18-MAR-19	R4569447
Lead (Pb)-Total	<0.000050		0.000050	mg/L		18-MAR-19	R4569447
Lithium (Li)-Total	0.0404		0.0010	mg/L		18-MAR-19	R4569447
Magnesium (Mg)-Total	34.2		0.10	mg/L		18-MAR-19	R4569447
Manganese (Mn)-Total	0.685		0.00010	mg/L		18-MAR-19	R4569447
Molybdenum (Mo)-Total	0.00290		0.000050	mg/L		18-MAR-19	R4569447
Nickel (Ni)-Total	0.00091		0.00050	mg/L		18-MAR-19	R4569447
Potassium (K)-Total	2.26		0.050	mg/L		18-MAR-19	R4569447
Selenium (Se)-Total	<0.050		0.050	ug/L		18-MAR-19	R4569447
Silicon (Si)-Total	6.47		0.10	mg/L		18-MAR-19	R4569447
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-MAR-19	R4569447
Sodium (Na)-Total	27.5		0.050	mg/L		18-MAR-19	R4569447
Strontium (Sr)-Total	1.09		0.00020	mg/L		18-MAR-19	R4569447
Thallium (Tl)-Total	0.000167		0.000010	mg/L		18-MAR-19	R4569447
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-MAR-19	R4569447
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-MAR-19	R4569447
Uranium (U)-Total	0.000984		0.000010	mg/L		18-MAR-19	R4569447
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-MAR-19	R4569447
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		18-MAR-19	R4569447
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.7		1.0	mg/L		17-MAR-19	R4568267
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	342		1.0	mg/L		16-MAR-19	R4568113
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		16-MAR-19	R4568113
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		16-MAR-19	R4568113
Alkalinity, Total (as CaCO3)	342		1.0	mg/L		16-MAR-19	R4568113
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.116		0.0050	mg/L		20-MAR-19	R4572731
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-MAR-19	R4568498
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		14-MAR-19	R4568498
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	750		2.0	uS/cm		16-MAR-19	R4568113
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.287		0.020	mg/L		14-MAR-19	R4568498
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2243839-1 GH_MW-TD_WG_2019-01-01_NP							
Sampled By: CLIENT on 12-MAR-19 @ 11:20							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	94.8		-100	%		20-MAR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.6			%		20-MAR-19	
Anion Sum	8.51			meq/L		20-MAR-19	
Cation Sum	8.07			meq/L		20-MAR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-MAR-19	R4568498
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-MAR-19	R4568498
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		13-MAR-19	R4564447
<b>Oxidation redution potential by elect.</b>							
ORP	369		-1000	mV		18-MAR-19	R4569408
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		14-MAR-19	R4565831
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	79.7		0.30	mg/L		14-MAR-19	R4568498
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	453	DLHC	20	mg/L		18-MAR-19	R4570798
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.4		1.0	mg/L		18-MAR-19	R4570669
<b>Turbidity</b>							
Turbidity	2.91		0.10	NTU		14-MAR-19	R4565449
<b>pH</b>							
pH	7.76		0.10	pH		16-MAR-19	R4568113

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Qualifiers for Sample Submission Listed:

Qualifier	Description
SPL	Sample was Preserved at the laboratory

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O <sub>2</sub> electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4568267							
<b>WG3008076-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	17-MAR-19
<b>WG3008076-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	17-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	16-MAR-19
<b>WG3007872-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	16-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4571992							
<b>WG3009632-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	19-MAR-19
<b>WG3009632-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	19-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4569447							
<b>WG3008447-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.6		%		80-120	18-MAR-19
<b>WG3008447-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	18-MAR-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	16-MAR-19
<b>BOD-BC-CL</b>								
	<b>Water</b>							
Batch	R4568631							
<b>WG3008546-2</b>	<b>LCS</b>							
Biochemical Oxygen Demand			100.7		%		85-115	13-MAR-19
<b>WG3008546-1</b>	<b>MB</b>							
Biochemical Oxygen Demand			<2.0		mg/L		2	13-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4568498							
<b>WG3008287-2</b>	<b>LCS</b>							
Bromide (Br)			103.0		%		85-115	14-MAR-19
<b>WG3008287-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-MAR-19
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4570187							
<b>WG3009095-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.3		%		80-120	18-MAR-19
<b>WG3009095-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4570187							
<b>WG3009095-6</b>	<b>LCS</b>							
Total Organic Carbon			95.7		%		80-120	18-MAR-19
<b>WG3009095-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4568498							
<b>WG3008287-2</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		90-110	14-MAR-19
<b>WG3008287-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	14-MAR-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	16-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.9		%		90-110	16-MAR-19
<b>WG3007872-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	16-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
Batch	R4568498							
<b>WG3008287-2</b>	<b>LCS</b>							
Fluoride (F)			98.3		%		90-110	14-MAR-19
<b>WG3008287-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	14-MAR-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
Batch	R4570191							
<b>WG3007625-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.3		%		80-120	19-MAR-19
<b>WG3007625-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-MAR-19
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
Batch	R4570191							
<b>WG3009012-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.3		%		80-120	19-MAR-19
<b>WG3009012-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-MAR-19
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
Batch	R4573515							
<b>WG3010420-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			82.0		%		80-120	20-MAR-19
<b>WG3010420-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	20-MAR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
Batch	R4571992							
<b>WG3009632-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			93.0		%		80-120	19-MAR-19
Antimony (Sb)-Dissolved			93.8		%		80-120	19-MAR-19
Arsenic (As)-Dissolved			88.9		%		80-120	19-MAR-19
Barium (Ba)-Dissolved			88.1		%		80-120	19-MAR-19
Bismuth (Bi)-Dissolved			91.1		%		80-120	19-MAR-19
Boron (B)-Dissolved			99.0		%		80-120	19-MAR-19
Cadmium (Cd)-Dissolved			89.8		%		80-120	19-MAR-19
Calcium (Ca)-Dissolved			101.5		%		80-120	19-MAR-19
Cobalt (Co)-Dissolved			89.2		%		80-120	19-MAR-19
Copper (Cu)-Dissolved			90.3		%		80-120	19-MAR-19
Iron (Fe)-Dissolved			91.9		%		80-120	19-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3009632-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			97.6		%		80-120	19-MAR-19
Lithium (Li)-Dissolved			97.6		%		80-120	19-MAR-19
Magnesium (Mg)-Dissolved			89.0		%		80-120	19-MAR-19
Manganese (Mn)-Dissolved			88.0		%		80-120	19-MAR-19
Molybdenum (Mo)-Dissolved			96.2		%		80-120	19-MAR-19
Nickel (Ni)-Dissolved			90.8		%		80-120	19-MAR-19
Potassium (K)-Dissolved			94.4		%		80-120	19-MAR-19
Selenium (Se)-Dissolved			93.0		%		80-120	19-MAR-19
Silicon (Si)-Dissolved			92.4		%		60-140	19-MAR-19
Silver (Ag)-Dissolved			91.8		%		80-120	19-MAR-19
Sodium (Na)-Dissolved			93.7		%		80-120	19-MAR-19
Strontium (Sr)-Dissolved			97.9		%		80-120	19-MAR-19
Thallium (Tl)-Dissolved			93.5		%		80-120	19-MAR-19
Tin (Sn)-Dissolved			90.3		%		80-120	19-MAR-19
Titanium (Ti)-Dissolved			90.3		%		80-120	19-MAR-19
Uranium (U)-Dissolved			98.8		%		80-120	19-MAR-19
Vanadium (V)-Dissolved			92.2		%		80-120	19-MAR-19
Zinc (Zn)-Dissolved			92.6		%		80-120	19-MAR-19
<b>WG3009632-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4571992</b>							
<b>WG3009632-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-MAR-19
<b>Batch</b>	<b>R4573617</b>							
<b>WG3010138-3</b>	<b>DUP</b>	<b>L2243839-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	20-MAR-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-19
Arsenic (As)-Dissolved		0.00012	0.00014		mg/L	4.7	20	20-MAR-19
Barium (Ba)-Dissolved		0.0213	0.0223		mg/L	0.5	20	20-MAR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAR-19
Boron (B)-Dissolved		0.356	0.358		mg/L	0.8	20	20-MAR-19
Cadmium (Cd)-Dissolved		0.000203	0.000203		mg/L	2.2	20	20-MAR-19
Calcium (Ca)-Dissolved		85.0	85.1		mg/L	1.7	20	20-MAR-19
Chromium (Cr)-Dissolved		0.00041	0.00039		mg/L	5.9	20	20-MAR-19
Cobalt (Co)-Dissolved		0.00042	0.00044		mg/L	0.7	20	20-MAR-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-19
Iron (Fe)-Dissolved		0.271	0.274		mg/L	2.9	20	20-MAR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAR-19
Lithium (Li)-Dissolved		0.0400	0.0393		mg/L	2.0	20	20-MAR-19
Magnesium (Mg)-Dissolved		31.0	36.1		mg/L	1.1	20	20-MAR-19
Manganese (Mn)-Dissolved		0.653	0.732		mg/L	0.3	20	20-MAR-19
Molybdenum (Mo)-Dissolved		0.00285	0.00288		mg/L	3.8	20	20-MAR-19
Nickel (Ni)-Dissolved		0.00091	0.00097		mg/L	1.6	20	20-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573617</b>							
<b>WG3010138-3</b>	<b>DUP</b>	<b>L2243839-1</b>						
Potassium (K)-Dissolved		2.30	2.29		mg/L	1.5	20	20-MAR-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAR-19
Silicon (Si)-Dissolved		6.21	6.44		mg/L	1.4	20	20-MAR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-MAR-19
Sodium (Na)-Dissolved		27.1	29.1		mg/L	2.2	20	20-MAR-19
Strontium (Sr)-Dissolved		1.06	1.07		mg/L	1.3	20	20-MAR-19
Thallium (Tl)-Dissolved		0.000179	0.000160		mg/L	1.8	20	20-MAR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-MAR-19
Uranium (U)-Dissolved		0.00107	0.000986		mg/L	1.7	20	20-MAR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-19
<b>WG3010138-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.8		%		80-120	20-MAR-19
Antimony (Sb)-Dissolved			89.9		%		80-120	20-MAR-19
Arsenic (As)-Dissolved			95.6		%		80-120	20-MAR-19
Barium (Ba)-Dissolved			97.1		%		80-120	20-MAR-19
Bismuth (Bi)-Dissolved			93.3		%		80-120	20-MAR-19
Boron (B)-Dissolved			90.6		%		80-120	20-MAR-19
Cadmium (Cd)-Dissolved			94.2		%		80-120	20-MAR-19
Calcium (Ca)-Dissolved			93.0		%		80-120	20-MAR-19
Chromium (Cr)-Dissolved			97.0		%		80-120	20-MAR-19
Cobalt (Co)-Dissolved			97.4		%		80-120	20-MAR-19
Copper (Cu)-Dissolved			96.8		%		80-120	20-MAR-19
Iron (Fe)-Dissolved			90.3		%		80-120	20-MAR-19
Lead (Pb)-Dissolved			90.9		%		80-120	20-MAR-19
Lithium (Li)-Dissolved			90.3		%		80-120	20-MAR-19
Magnesium (Mg)-Dissolved			104.1		%		80-120	20-MAR-19
Manganese (Mn)-Dissolved			96.3		%		80-120	20-MAR-19
Molybdenum (Mo)-Dissolved			92.8		%		80-120	20-MAR-19
Nickel (Ni)-Dissolved			97.0		%		80-120	20-MAR-19
Potassium (K)-Dissolved			94.6		%		80-120	20-MAR-19
Selenium (Se)-Dissolved			89.9		%		80-120	20-MAR-19
Silicon (Si)-Dissolved			97.1		%		60-140	20-MAR-19





## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573617</b>							
<b>WG3010138-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			96.2		%		80-120	20-MAR-19
Sodium (Na)-Dissolved			101.3		%		80-120	20-MAR-19
Strontium (Sr)-Dissolved			87.6		%		80-120	20-MAR-19
Thallium (Tl)-Dissolved			90.9		%		80-120	20-MAR-19
Tin (Sn)-Dissolved			91.3		%		80-120	20-MAR-19
Titanium (Ti)-Dissolved			95.6		%		80-120	20-MAR-19
Uranium (U)-Dissolved			90.9		%		80-120	20-MAR-19
Vanadium (V)-Dissolved			96.4		%		80-120	20-MAR-19
Zinc (Zn)-Dissolved			98.4		%		80-120	20-MAR-19
<b>WG3010138-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573617</b>							
<b>WG3010138-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4569447</b>							
<b>WG3008447-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.5		%		80-120	18-MAR-19
Antimony (Sb)-Total			102.9		%		80-120	18-MAR-19
Arsenic (As)-Total			96.4		%		80-120	18-MAR-19
Barium (Ba)-Total			98.2		%		80-120	18-MAR-19
Bismuth (Bi)-Total			92.8		%		80-120	18-MAR-19
Boron (B)-Total			94.6		%		80-120	18-MAR-19
Cadmium (Cd)-Total			95.7		%		80-120	18-MAR-19
Calcium (Ca)-Total			96.2		%		80-120	18-MAR-19
Chromium (Cr)-Total			99.4		%		80-120	18-MAR-19
Cobalt (Co)-Total			98.9		%		80-120	18-MAR-19
Copper (Cu)-Total			95.3		%		80-120	18-MAR-19
Iron (Fe)-Total			100.8		%		80-120	18-MAR-19
Lead (Pb)-Total			96.1		%		80-120	18-MAR-19
Lithium (Li)-Total			95.2		%		80-120	18-MAR-19
Magnesium (Mg)-Total			101.5		%		80-120	18-MAR-19
Manganese (Mn)-Total			96.1		%		80-120	18-MAR-19
Molybdenum (Mo)-Total			101.0		%		80-120	18-MAR-19
Nickel (Ni)-Total			97.3		%		80-120	18-MAR-19
Potassium (K)-Total			95.9		%		80-120	18-MAR-19
Selenium (Se)-Total			90.2		%		80-120	18-MAR-19
Silicon (Si)-Total			96.2		%		80-120	18-MAR-19
Silver (Ag)-Total			98.0		%		80-120	18-MAR-19
Sodium (Na)-Total			102.6		%		80-120	18-MAR-19
Strontium (Sr)-Total			98.5		%		80-120	18-MAR-19
Thallium (Tl)-Total			94.0		%		80-120	18-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4569447</b>							
<b>WG3008447-2</b>	<b>LCS</b>							
Tin (Sn)-Total			96.1		%		80-120	18-MAR-19
Titanium (Ti)-Total			95.3		%		80-120	18-MAR-19
Uranium (U)-Total			94.5		%		80-120	18-MAR-19
Vanadium (V)-Total			99.5		%		80-120	18-MAR-19
Zinc (Zn)-Total			96.6		%		80-120	18-MAR-19
<b>WG3008447-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	18-MAR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-MAR-19
Boron (B)-Total			<0.010		mg/L		0.01	18-MAR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	18-MAR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-MAR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	18-MAR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	18-MAR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	18-MAR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	18-MAR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-MAR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-MAR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-MAR-19
Potassium (K)-Total			<0.050		mg/L		0.05	18-MAR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-MAR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	18-MAR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	18-MAR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	18-MAR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	18-MAR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-MAR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-MAR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-MAR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
Water								
Batch R4569447								
WG3008447-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-MAR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-MAR-19
<b>NH3-L-F-CL</b>								
Water								
Batch R4572731								
WG3009736-6 LCS								
Ammonia as N			114.7		%		85-115	19-MAR-19
WG3009736-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	19-MAR-19
<b>NO2-L-IC-N-CL</b>								
Water								
Batch R4568498								
WG3008287-2 LCS								
Nitrite (as N)			101.6		%		90-110	14-MAR-19
WG3008287-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	14-MAR-19
<b>NO3-L-IC-N-CL</b>								
Water								
Batch R4568498								
WG3008287-2 LCS								
Nitrate (as N)			99.96		%		90-110	14-MAR-19
WG3008287-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	14-MAR-19
<b>OH-CL</b>								
Water								
Batch R4568113								
WG3007872-13 MB								
Hydroxide (OH)			<5.0		mg/L		5	16-MAR-19
<b>ORP-CL</b>								
Water								
Batch R4569408								
WG3008776-7 CRM				CL-ORP				
ORP			223		mV		210-230	18-MAR-19
<b>P-T-L-COL-CL</b>								
Water								
Batch R4565831								
WG3006780-18 LCS								
Phosphorus (P)-Total			103.8		%		80-120	14-MAR-19
WG3006780-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-MAR-19



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4568113							
<b>WG3007872-14</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	16-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4564447							
<b>WG3005680-20</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	13-MAR-19
<b>WG3005680-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4568498							
<b>WG3008287-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.0		%		90-110	14-MAR-19
<b>WG3008287-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	14-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4570798							
<b>WG3008301-2</b>	<b>LCS</b>							
Total Dissolved Solids			107.6		%		85-115	18-MAR-19
<b>WG3008301-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4570447							
<b>WG3009245-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	18-MAR-19
<b>WG3009245-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4570669							
<b>WG3008411-6</b>	<b>LCS</b>							
Total Suspended Solids			89.2		%		85-115	18-MAR-19
<b>WG3008411-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4565449							
<b>WG3006698-32</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	14-MAR-19
<b>WG3006698-31</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-MAR-19

# Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2243839

Report Date: 12-NOV-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	12-MAR-19 11:20	18-MAR-19 09:25	0.25	142	hours	EHTR-FM
pH	1	12-MAR-19 11:20	16-MAR-19 09:00	0.25	94	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2243839 were received on 13-MAR-19 12:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jeremy Enns			Lab Contact	Lyudmyla Shvets			Email 1:			
Email	Jeremy.Enns@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:			
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610 013		
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-865-3341			Phone Number	403 407 1794						

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	Y	N	Y	Y	N	N	
GH_MW-TD_WG_2019-01-01_NP	GH_MW-TD	WG		2019/03/12	11:20	G	6	1	1	1	1	1	1		1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/13/200

SERVICE REQUEST (rush - subject to availability) <input type="checkbox"/> Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge <input type="checkbox"/> Emergency (1 Business Day) - 100% surcharge <input type="checkbox"/> For Emergency <1 Day, ASAP or Weekend - Contact ALS		Sampler's Name Sampler's Signature	Mobile # Date/Time
---	--	---------------------------------------	-----------------------



L2243839-COFC



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 26-MAR-19  
Report Date: 12-NOV-19 16:35 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2249333  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-01  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 11:12  
ADDITIONAL 12-APR-19 08:43

17-APR-2019 Additional analysis for Total Metals on L2249333-1, -2, -3.

Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-1 GH_MW-PC_WG_2019-01-01_NP							
Sampled By: J. FRANCIS on 25-MAR-19 @ 12:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	231		5.0	mg/L		01-APR-19	R4588394
Carbonate (CO3)	<5.0		5.0	mg/L		01-APR-19	R4588394
Dissolved Organic Carbon	1.55		0.50	mg/L		03-APR-19	R4589160
Hydroxide (OH)	<5.0		5.0	mg/L		01-APR-19	R4588394
Total Kjeldahl Nitrogen	0.269		0.050	mg/L		01-APR-19	R4588920
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-MAR-19	R4587492
Mercury (Hg)-Total	0.00072		0.00050	ug/L		03-APR-19	R4589742
Total Organic Carbon	1.32		0.50	mg/L		03-APR-19	R4589160
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-MAR-19	29-MAR-19	R4587478
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAR-19	30-MAR-19	R4587597
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587249
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-MAR-19	29-MAR-19	R4587478
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Barium (Ba)-Dissolved	0.0835		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Boron (B)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Cadmium (Cd)-Dissolved	0.0296		0.0050	ug/L	29-MAR-19	29-MAR-19	R4587478
Calcium (Ca)-Dissolved	106		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-MAR-19	29-MAR-19	R4587478
Copper (Cu)-Dissolved	0.0201		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Lithium (Li)-Dissolved	0.0062		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
Magnesium (Mg)-Dissolved	76.2		0.10	mg/L	29-MAR-19	29-MAR-19	R4587478
Manganese (Mn)-Dissolved	0.00026		0.00010	mg/L	29-MAR-19	01-APR-19	R4588535
Molybdenum (Mo)-Dissolved	0.00241		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Potassium (K)-Dissolved	0.787		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Selenium (Se)-Dissolved	60.0		0.050	ug/L	29-MAR-19	29-MAR-19	R4587478
Silicon (Si)-Dissolved	2.10		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Sodium (Na)-Dissolved	0.846		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Strontium (Sr)-Dissolved	0.121		0.00020	mg/L	29-MAR-19	29-MAR-19	R4587478
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Uranium (U)-Dissolved	0.00401		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
<b>Hardness</b>							
Hardness (as CaCO3)	578		0.50	mg/L		02-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-1 GH_MW-PC_WG_2019-01-01_NP							
Sampled By: J. FRANCIS on 25-MAR-19 @ 12:50							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.110		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	0.00012		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	0.00032		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	0.0969		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	0.0314		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	114		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	0.00057		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	0.18		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	0.0726		0.00050	mg/L		16-APR-19	R4602283
Iron (Fe)-Total	0.082		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	0.000209		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	0.0069		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	79.5		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	0.00528		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	0.00259		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	0.00087		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	0.857		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	59.3		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	2.70		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	0.000010		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	1.00		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	0.133		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	0.00442		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	0.00057		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	0.0051		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.5		1.0	mg/L		02-APR-19	R4589092
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	189		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Total (as CaCO3)	189		1.0	mg/L		01-APR-19	R4588394
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0259		0.0050	mg/L		02-APR-19	R4589133
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		28-MAR-19	R4587103
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		28-MAR-19	R4587103
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1000		2.0	uS/cm		01-APR-19	R4588394
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.36	DLHC	0.10	mg/L		28-MAR-19	R4587103
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.5			%		02-APR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-1 GH_MW-PC_WG_2019-01-01_NP Sampled By: J. FRANCIS on 25-MAR-19 @ 12:50 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	12.0			meq/L		02-APR-19	
Cation Sum	11.6			meq/L		02-APR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	97.0		-100	%		02-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.82	DLHC	0.025	mg/L		28-MAR-19	R4587103
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		28-MAR-19	R4587103
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0062		0.0010	mg/L		27-MAR-19	R4586141
<b>Oxidation redution potential by elect.</b>							
ORP	436		-1000	mV		01-APR-19	R4588349
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0074		0.0020	mg/L		02-APR-19	R4589156
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	386	DLHC	1.5	mg/L		28-MAR-19	R4587103
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	758	DLHC	20	mg/L		01-APR-19	R4589098
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-APR-19	R4588984
<b>Turbidity</b>							
Turbidity	1.20		0.10	NTU		27-MAR-19	R4586139
<b>pH</b>							
pH	8.10		0.10	pH		01-APR-19	R4588394
L2249333-2 GH_MW-RLP_WG_2019-01-01_NP Sampled By: J. FRANCIS on 25-MAR-19 @ 15:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	272		5.0	mg/L		01-APR-19	R4588394
Carbonate (CO3)	<5.0		5.0	mg/L		01-APR-19	R4588394
Dissolved Organic Carbon	<0.50		0.50	mg/L		03-APR-19	R4589160
Hydroxide (OH)	<5.0		5.0	mg/L		01-APR-19	R4588394
Total Kjeldahl Nitrogen	0.156		0.050	mg/L		01-APR-19	R4588920
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-MAR-19	R4587492
Mercury (Hg)-Total	0.00056		0.00050	ug/L		03-APR-19	R4589742
Total Organic Carbon	0.65		0.50	mg/L		03-APR-19	R4589160
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-MAR-19	29-MAR-19	R4587478
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAR-19	30-MAR-19	R4587597
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587249
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-MAR-19	29-MAR-19	R4587478
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Arsenic (As)-Dissolved	0.00070		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Barium (Ba)-Dissolved	0.0474		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Boron (B)-Dissolved	0.015		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-2 GH_MW-RLP_WG_2019-01-01_NP							
Sampled By: J. FRANCIS on 25-MAR-19 @ 15:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-MAR-19	29-MAR-19	R4587478
Calcium (Ca)-Dissolved	55.2		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-MAR-19	29-MAR-19	R4587478
Copper (Cu)-Dissolved	0.00077		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Iron (Fe)-Dissolved	0.018		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Lithium (Li)-Dissolved	0.0064		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
Magnesium (Mg)-Dissolved	27.8		0.10	mg/L	29-MAR-19	29-MAR-19	R4587478
Manganese (Mn)-Dissolved	0.0844		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Molybdenum (Mo)-Dissolved	0.00373		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Nickel (Ni)-Dissolved	0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Potassium (K)-Dissolved	1.10		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-MAR-19	29-MAR-19	R4587478
Silicon (Si)-Dissolved	4.36		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Sodium (Na)-Dissolved	3.25		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Strontium (Sr)-Dissolved	0.181		0.00020	mg/L	29-MAR-19	29-MAR-19	R4587478
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Uranium (U)-Dissolved	0.00108		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Zinc (Zn)-Dissolved	0.0051		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
<b>Hardness</b>							
Hardness (as CaCO3)	252		0.50	mg/L		01-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.250		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	0.00102		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	0.0478		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	0.018		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	0.0111		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	61.6		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	0.00056		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	0.16		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	0.00123		0.00050	mg/L		16-APR-19	R4602283
Iron (Fe)-Total	0.420		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	0.000137		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	0.0072		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	29.6		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	0.0927		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	0.00380		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	0.00083		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	1.26		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	<0.050		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	5.22		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-2 GH_MW-RLP_WG_2019-01-01_NP							
Sampled By: J. FRANCIS on 25-MAR-19 @ 15:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Total	3.30		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	0.197		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	0.00019		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	0.00116		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	0.00102		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	0.0389		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.4		1.0	mg/L		02-APR-19	R4589092
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	223		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Total (as CaCO3)	223		1.0	mg/L		01-APR-19	R4588394
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0424		0.0050	mg/L		02-APR-19	R4589133
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		28-MAR-19	R4587103
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		28-MAR-19	R4587103
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	482		2.0	uS/cm		01-APR-19	R4588394
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.86		0.020	mg/L		28-MAR-19	R4587103
<b>Ion Balance Calculation</b>							
Ion Balance	96.9		-100	%		02-APR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.6			%		02-APR-19	
Anion Sum	5.38			meq/L		02-APR-19	
Cation Sum	5.21			meq/L		02-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		28-MAR-19	R4587103
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		28-MAR-19	R4587103
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-MAR-19	R4586141
<b>Oxidation redution potential by elect.</b>							
ORP	431		-1000	mV		01-APR-19	R4588349
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0091		0.0020	mg/L		02-APR-19	R4589156
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	39.8		0.30	mg/L		28-MAR-19	R4587103
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	291	DLHC	20	mg/L		01-APR-19	R4589098
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.1		1.0	mg/L		01-APR-19	R4588984
<b>Turbidity</b>							
Turbidity	9.35		0.10	NTU		27-MAR-19	R4586139
<b>pH</b>							
pH	8.20		0.10	pH		01-APR-19	R4588394

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-2 GH_MW-RLP_WG_2019-01-01_NP Sampled By: J. FRANCIS on 25-MAR-19 @ 15:00 Matrix: WG							
L2249333-3 GH_TRP1_WG_2019-01-01_NP Sampled By: J. FRANCIS on 25-MAR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		01-APR-19	R4588394
Carbonate (CO3)	<5.0		5.0	mg/L		01-APR-19	R4588394
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-APR-19	R4589160
Hydroxide (OH)	<5.0		5.0	mg/L		01-APR-19	R4588394
Total Kjeldahl Nitrogen	0.207		0.050	mg/L		01-APR-19	R4588920
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-APR-19	R4589742
Total Organic Carbon	<0.50		0.50	mg/L		02-APR-19	R4589160
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-MAR-19	29-MAR-19	R4587478
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	30-MAR-19	R4587597
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587249
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-MAR-19	R4586744
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-MAR-19	29-MAR-19	R4587478
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Boron (B)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-MAR-19	29-MAR-19	R4587478
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-MAR-19	29-MAR-19	R4587478
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	29-MAR-19	29-MAR-19	R4587478
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587478
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Potassium (K)-Dissolved	<0.050		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-MAR-19	29-MAR-19	R4587478
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	29-MAR-19	29-MAR-19	R4587478
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	29-MAR-19	29-MAR-19	R4587478
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-MAR-19	29-MAR-19	R4587478
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-MAR-19	29-MAR-19	R4587478
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	29-MAR-19	29-MAR-19	R4587478
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-MAR-19	29-MAR-19	R4587478
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	29-MAR-19	29-MAR-19	R4587478
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		01-APR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-3 GH_TRP1_WG_2019-01-01_NP							
Sampled By: J. FRANCIS on 25-MAR-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	<0.050		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		17-APR-19	R4603910
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-APR-19	R4603910
Iron (Fe)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	<0.0010		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	<0.10		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	<0.050		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	<0.050		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	<0.10		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	<0.050		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.9		1.0	mg/L		02-APR-19	R4589092
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		01-APR-19	R4588394
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0372		0.0050	mg/L		02-APR-19	R4589133
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		28-MAR-19	R4587103
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		28-MAR-19	R4587103
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		01-APR-19	R4588394
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		28-MAR-19	R4587103
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2249333-3 GH_TRP1_WG_2019-01-01_NP Sampled By: J. FRANCIS on 25-MAR-19 @ 12:00 Matrix: WG							
<b>Ion Balance Calculation</b> Ion Balance	0.0		-100	%		02-APR-19	
<b>Ion Balance Calculation</b> Cation - Anion Balance	0.0			%		02-APR-19	
Anion Sum	<0.10			meq/L		02-APR-19	
Cation Sum	<0.10			meq/L		02-APR-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	<0.0050		0.0050	mg/L		28-MAR-19	R4587103
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		28-MAR-19	R4587103
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-MAR-19	R4586141
<b>Oxidation redution potential by elect.</b> ORP	442		-1000	mV		01-APR-19	R4588349
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-APR-19	R4589156
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		28-MAR-19	R4587103
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		01-APR-19	R4589098
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		01-APR-19	R4588984
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		27-MAR-19	R4586139
<b>pH</b> pH	5.53		0.10	pH		01-APR-19	R4588394
L2249333-4 GH_MW-PC_WG_2019-01-01_FB-HG Sampled By: J. FRANCIS on 25-MAR-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-APR-19	R4589742
L2249333-5 GH_MW-RLP_WG_2019-01-01_FB-HG Sampled By: J. FRANCIS on 25-MAR-19 @ 15:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-APR-19	R4589742

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-01

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BIC-CL</b>	<b>Water</b>							
Batch	R4588394							
<b>WG3018523-13 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	31-MAY-19
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2 LCS</b>								
Bromide (Br)			99.1		%		85-115	28-MAR-19
<b>WG3017245-1 MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	28-MAR-19
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4589160							
<b>WG3019580-9 DUP</b>		<b>L2249333-1</b>						
Dissolved Organic Carbon		1.55	1.64		mg/L	5.9	20	02-APR-19
<b>WG3019580-2 LCS</b>								
Dissolved Organic Carbon			100.4		%		80-120	02-APR-19
<b>WG3019580-8 LCS</b>								
Dissolved Organic Carbon			104.9		%		80-120	02-APR-19
<b>WG3019580-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019580-7 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019580-10 MS</b>		<b>L2249333-2</b>						
Dissolved Organic Carbon			100.9		%		70-130	02-APR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4589160							
<b>WG3019580-9 DUP</b>		<b>L2249333-1</b>						
Total Organic Carbon		1.32	1.17		mg/L	12	20	02-APR-19
<b>WG3019580-2 LCS</b>								
Total Organic Carbon			104.5		%		80-120	02-APR-19
<b>WG3019580-8 LCS</b>								
Total Organic Carbon			104.9		%		80-120	02-APR-19
<b>WG3019580-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019580-7 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	02-APR-19
<b>WG3019580-10 MS</b>		<b>L2249333-2</b>						
Total Organic Carbon			99.6		%		70-130	02-APR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2 LCS</b>								
Chloride (Cl)			98.2		%		90-110	28-MAR-19
<b>WG3017245-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	28-MAR-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4588394							
<b>WG3018523-10 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	01-APR-19
<b>WG3018523-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	31-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4588394							
<b>WG3018523-11 LCS</b>								
Conductivity (@ 25C)			99.3		%		90-110	01-APR-19
<b>WG3018523-14 LCS</b>								
Conductivity (@ 25C)			101.4		%		90-110	01-APR-19
<b>WG3018523-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-APR-19
<b>WG3018523-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	01-APR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4587103							
<b>WG3017245-2 LCS</b>								
Fluoride (F)			99.97		%		90-110	28-MAR-19
<b>WG3017245-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	28-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4587597							
<b>WG3017416-3 DUP</b>		<b>L2249333-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-MAR-19
<b>WG3017416-2 LCS</b>								
Mercury (Hg)-Dissolved			95.4		%		80-120	30-MAR-19
<b>WG3017416-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	30-MAR-19
<b>WG3017416-4 MS</b>		<b>L2249333-2</b>						
Mercury (Hg)-Dissolved			94.5		%		70-130	30-MAR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587492</b>							
<b>WG3017644-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.7		%		80-120	29-MAR-19
<b>WG3017644-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAR-19
<b>HG-T-U-CVAF-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589742</b>							
<b>WG3020234-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.2		%		80-120	03-APR-19
<b>WG3020234-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	03-APR-19
<b>WG3020234-5</b>	<b>MS</b>	<b>L2249333-2</b>						
Mercury (Hg)-Total			89.3		%		70-130	03-APR-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587478</b>							
<b>WG3016836-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.3		%		80-120	29-MAR-19
Antimony (Sb)-Dissolved			101.8		%		80-120	29-MAR-19
Arsenic (As)-Dissolved			100.6		%		80-120	29-MAR-19
Barium (Ba)-Dissolved			106.5		%		80-120	29-MAR-19
Bismuth (Bi)-Dissolved			100.2		%		80-120	29-MAR-19
Boron (B)-Dissolved			94.1		%		80-120	29-MAR-19
Cadmium (Cd)-Dissolved			98.5		%		80-120	29-MAR-19
Calcium (Ca)-Dissolved			95.6		%		80-120	29-MAR-19
Chromium (Cr)-Dissolved			98.2		%		80-120	29-MAR-19
Cobalt (Co)-Dissolved			96.9		%		80-120	29-MAR-19
Copper (Cu)-Dissolved			97.4		%		80-120	29-MAR-19
Iron (Fe)-Dissolved			87.6		%		80-120	29-MAR-19
Lead (Pb)-Dissolved			103.8		%		80-120	29-MAR-19
Lithium (Li)-Dissolved			93.0		%		80-120	29-MAR-19
Magnesium (Mg)-Dissolved			98.7		%		80-120	29-MAR-19
Manganese (Mn)-Dissolved			96.4		%		80-120	29-MAR-19
Molybdenum (Mo)-Dissolved			104.9		%		80-120	29-MAR-19
Nickel (Ni)-Dissolved			97.2		%		80-120	29-MAR-19
Potassium (K)-Dissolved			96.2		%		80-120	29-MAR-19
Selenium (Se)-Dissolved			95.4		%		80-120	29-MAR-19
Silicon (Si)-Dissolved			94.0		%		60-140	29-MAR-19



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587478</b>							
<b>WG3016836-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			103.8		%		80-120	29-MAR-19
Sodium (Na)-Dissolved			98.8		%		80-120	29-MAR-19
Strontium (Sr)-Dissolved			103.0		%		80-120	29-MAR-19
Thallium (Tl)-Dissolved			101.7		%		80-120	29-MAR-19
Tin (Sn)-Dissolved			96.0		%		80-120	29-MAR-19
Titanium (Ti)-Dissolved			90.5		%		80-120	29-MAR-19
Uranium (U)-Dissolved			98.8		%		80-120	29-MAR-19
Vanadium (V)-Dissolved			98.4		%		80-120	29-MAR-19
Zinc (Zn)-Dissolved			108.0		%		80-120	29-MAR-19
<b>WG3016836-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-MAR-19



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587478</b>							
<b>WG3016836-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4602283</b>							
<b>WG3028246-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			105.4		%		80-120	16-APR-19
Antimony (Sb)-Total			109.3		%		80-120	16-APR-19
Arsenic (As)-Total			104.8		%		80-120	16-APR-19
Barium (Ba)-Total			110.5		%		80-120	16-APR-19
Bismuth (Bi)-Total			109.8		%		80-120	16-APR-19
Boron (B)-Total			103.8		%		80-120	16-APR-19
Cadmium (Cd)-Total			97.5		%		80-120	16-APR-19
Calcium (Ca)-Total			106.5		%		80-120	16-APR-19
Chromium (Cr)-Total			109.5		%		80-120	16-APR-19
Cobalt (Co)-Total			106.1		%		80-120	16-APR-19
Copper (Cu)-Total			103.9		%		80-120	16-APR-19
Iron (Fe)-Total			105.6		%		80-120	16-APR-19
Lead (Pb)-Total			107.9		%		80-120	16-APR-19
Lithium (Li)-Total			104.2		%		80-120	16-APR-19
Magnesium (Mg)-Total			107.2		%		80-120	16-APR-19
Manganese (Mn)-Total			106.6		%		80-120	16-APR-19
Molybdenum (Mo)-Total			107.5		%		80-120	16-APR-19
Nickel (Ni)-Total			105.1		%		80-120	16-APR-19
Potassium (K)-Total			108.4		%		80-120	16-APR-19
Selenium (Se)-Total			103.3		%		80-120	16-APR-19
Silicon (Si)-Total			102.8		%		80-120	16-APR-19
Silver (Ag)-Total			106.3		%		80-120	16-APR-19
Sodium (Na)-Total			108.6		%		80-120	16-APR-19
Strontium (Sr)-Total			108.4		%		80-120	16-APR-19
Thallium (Tl)-Total			111.7		%		80-120	16-APR-19



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4602283</b>							
<b>WG3028246-2</b>	<b>LCS</b>							
Tin (Sn)-Total			97.7		%		80-120	16-APR-19
Titanium (Ti)-Total			100.5		%		80-120	16-APR-19
Uranium (U)-Total			105.4		%		80-120	16-APR-19
Vanadium (V)-Total			109.3		%		80-120	16-APR-19
Zinc (Zn)-Total			111.1		%		80-120	16-APR-19
<b>WG3028246-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	16-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	16-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	16-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	16-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	16-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-APR-19



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch R4602283</b>								
<b>WG3028246-1 MB</b>								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-APR-19
<b>Batch R4603910</b>								
<b>WG3029090-2 LCS</b>								
Aluminum (Al)-Total			108.6		%		80-120	17-APR-19
Antimony (Sb)-Total			112.6		%		80-120	17-APR-19
Arsenic (As)-Total			101.0		%		80-120	17-APR-19
Barium (Ba)-Total			105.5		%		80-120	17-APR-19
Bismuth (Bi)-Total			97.1		%		80-120	17-APR-19
Boron (B)-Total			89.7		%		80-120	17-APR-19
Cadmium (Cd)-Total			100.8		%		80-120	17-APR-19
Calcium (Ca)-Total			91.8		%		80-120	17-APR-19
Chromium (Cr)-Total			104.1		%		80-120	17-APR-19
Cobalt (Co)-Total			104.8		%		80-120	17-APR-19
Copper (Cu)-Total			102.5		%		80-120	17-APR-19
Iron (Fe)-Total			98.7		%		80-120	17-APR-19
Lead (Pb)-Total			96.8		%		80-120	17-APR-19
Lithium (Li)-Total			96.0		%		80-120	17-APR-19
Magnesium (Mg)-Total			106.1		%		80-120	17-APR-19
Manganese (Mn)-Total			105.8		%		80-120	17-APR-19
Molybdenum (Mo)-Total			104.1		%		80-120	17-APR-19
Nickel (Ni)-Total			104.7		%		80-120	17-APR-19
Potassium (K)-Total			103.6		%		80-120	17-APR-19
Selenium (Se)-Total			102.2		%		80-120	17-APR-19
Silicon (Si)-Total			98.4		%		80-120	17-APR-19
Silver (Ag)-Total			100.5		%		80-120	17-APR-19
Sodium (Na)-Total			108.0		%		80-120	17-APR-19
Strontium (Sr)-Total			108.2		%		80-120	17-APR-19
Thallium (Tl)-Total			94.0		%		80-120	17-APR-19
Tin (Sn)-Total			101.2		%		80-120	17-APR-19
Titanium (Ti)-Total			96.4		%		80-120	17-APR-19
Uranium (U)-Total			100.7		%		80-120	17-APR-19
Vanadium (V)-Total			107.2		%		80-120	17-APR-19
Zinc (Zn)-Total			105.6		%		80-120	17-APR-19
<b>WG3029090-1</b>								



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4603910</b>							
<b>WG3029090-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	17-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	17-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	17-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	17-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	17-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	17-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	17-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	17-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	17-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	17-APR-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4589133							
WG3019552-4	LCS							
Ammonia as N			98.5		%		85-115	02-APR-19
WG3019552-3	MB							
Ammonia as N			<0.0050		mg/L		0.005	02-APR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4587103							
WG3017245-2	LCS							
Nitrite (as N)			104.4		%		90-110	28-MAR-19
WG3017245-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	28-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4587103							
WG3017245-2	LCS							
Nitrate (as N)			98.6		%		90-110	28-MAR-19
WG3017245-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	28-MAR-19
<b>OH-CL</b>								
<b>Water</b>								
Batch	R4588394							
WG3018523-10	MB							
Hydroxide (OH)			<5.0		mg/L		5	01-APR-19
WG3018523-13	MB							
Hydroxide (OH)			<5.0		mg/L		5	31-MAY-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4588349							
WG3018610-3	CRM	CL-ORP						
ORP			224		mV		210-230	01-APR-19
WG3018610-4	DUP	L2249333-2						
ORP		431	429	J	mV	2.0	15	01-APR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4589156							
WG3019346-2	LCS							
Phosphorus (P)-Total			112.1		%		80-120	02-APR-19
WG3019346-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-APR-19
<b>PH-CL</b>								
<b>Water</b>								







## Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588920</b>							
<b>WG3019217-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-16 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3019217-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588984</b>							
<b>WG3018262-16 LCS</b>								
Total Suspended Solids			95.4		%		85-115	01-APR-19
<b>WG3018262-15 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	01-APR-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4586139</b>							
<b>WG3015732-8 LCS</b>								
Turbidity			96.5		%		85-115	27-MAR-19
<b>WG3015732-7 MB</b>								
Turbidity			<0.10		NTU		0.1	27-MAR-19

# Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2249333

Report Date: 12-NOV-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	25-MAR-19 12:50	01-APR-19 09:15	0.25	164	hours	EHTR-FM
	2	25-MAR-19 15:00	01-APR-19 09:15	0.25	162	hours	EHTR-FM
	3	25-MAR-19 12:00	01-APR-19 09:15	0.25	165	hours	EHTR-FM
pH	1	25-MAR-19 12:50	01-APR-19 09:00	0.25	164	hours	EHTR-FM
	2	25-MAR-19 15:00	01-APR-19 09:00	0.25	162	hours	EHTR-FM
	3	25-MAR-19 12:00	01-APR-19 09:00	0.25	165	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2249333 were received on 26-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Jennifer.Kropp@teck.c	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Leigh.Stickney@teck.c	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	VPO00610013		
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-865-3341			Phone Number	403 407 1794						

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2249333-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA				
GH_MW-PC_WG_2019-01-01_NP	GH_MW-PC	WG		2019/03/25	12:50	G	7	1	1	1	1	1	1	1	1				
GH_MW-RLP_WG_2019-01-01_NP	GH_MW-RLP	WG		2019/03/25	15:00	G	7	1	1	1	1	1	1	1	1				
GH_TRP1_WG_2019-01-01_NP	GH_TRP1	WG		2019/03/25		G	7	1	1	1	1	1	1	1	1				
GH_MW-PC_WG_2019-01-01_FB-HG	GH_MW-PC	WG		2019/03/25	12:50	G	1									1			
GH_MW-RLP_WG_2019-01-01_FB-HG	GH_MW-RLP	WG		2019/03/25	15:00	G	1									1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	3/26/19
				<i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Sampler's Signature	Mobile #	Date/Time

6



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 28-MAR-19  
Report Date: 12-NOV-19 16:49 (MT)  
Version: FINAL REV. 3

Client Phone: 250-865-3341

## Certificate of Analysis

Lab Work Order #: L2250615  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-01  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 11:55  
ADDITIONAL 12-APR-19 08:48

17-APR-2019 Additional analysis for Total Metals on L2250615-1, -3, -5, -7.  
12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-1 GH_MW-UTC_1D_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 12:45							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	899		5.0	mg/L		02-APR-19	R4589102
Biochemical Oxygen Demand	7.3	DLHC	6.0	mg/L		28-MAR-19	R4589167
Carbonate (CO3)	20.4		5.0	mg/L		02-APR-19	R4589102
Dissolved Organic Carbon	10.6		0.50	mg/L		05-APR-19	R4591205
Hydroxide (OH)	<5.0		5.0	mg/L		02-APR-19	R4589102
Total Kjeldahl Nitrogen	0.673		0.050	mg/L		03-APR-19	R4590673
Mercury (Hg)-Total	0.0000190		0.0000050	mg/L		02-APR-19	R4588784
Mercury (Hg)-Total	0.0222		0.0050	ug/L		04-APR-19	R4590727
Total Organic Carbon	9.08		0.50	mg/L		05-APR-19	R4591205
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-MAR-19	30-MAR-19	R4588519
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAR-19	29-MAR-19	R4587492
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587477
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
Aluminum (Al)-Dissolved	0.0202		0.0030	mg/L	30-MAR-19	30-MAR-19	R4588519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Arsenic (As)-Dissolved	0.00178		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Barium (Ba)-Dissolved	0.0588		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Boron (B)-Dissolved	0.855		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cadmium (Cd)-Dissolved	0.0114		0.0050	ug/L	30-MAR-19	30-MAR-19	R4588519
Calcium (Ca)-Dissolved	2.74		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Chromium (Cr)-Dissolved	0.00086		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-MAR-19	30-MAR-19	R4588519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Iron (Fe)-Dissolved	0.222		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Lithium (Li)-Dissolved	1.06		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
Magnesium (Mg)-Dissolved	0.77		0.10	mg/L	30-MAR-19	30-MAR-19	R4588519
Manganese (Mn)-Dissolved	0.0190		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Molybdenum (Mo)-Dissolved	0.0187		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Nickel (Ni)-Dissolved	0.00504		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Potassium (K)-Dissolved	0.966		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Selenium (Se)-Dissolved	0.583		0.050	ug/L	30-MAR-19	30-MAR-19	R4588519
Silicon (Si)-Dissolved	3.01		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Silver (Ag)-Dissolved	0.000011		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Sodium (Na)-Dissolved	395		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Strontium (Sr)-Dissolved	0.162		0.00020	mg/L	30-MAR-19	30-MAR-19	R4588519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Uranium (U)-Dissolved	0.00564		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Vanadium (V)-Dissolved	0.00260		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Zinc (Zn)-Dissolved	0.0017		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
<b>Hardness</b>							
Hardness (as CaCO3)	10.0		0.50	mg/L		01-APR-19	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-1 GH_MW-UTC_1D_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 12:45							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.074		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	2.85		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	0.00037		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	0.00338		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	0.0727		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	0.000088		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	0.932		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	0.758		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	2.80		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	0.00497		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	1.04		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	0.0110		0.00050	mg/L		16-APR-19	R4602283
Iron (Fe)-Total	1.28		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	0.00187		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	1.10		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	1.03		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	0.0230		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	0.0198		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	0.0196		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	1.48		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	0.858		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	7.72		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	0.000065		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	414		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	0.175		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	0.000024		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	0.00088		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	0.064		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	0.00546		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	0.00668		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	0.224		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		03-APR-19	R4589933
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	737		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Carbonate (as CaCO3)	34.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Total (as CaCO3)	771		1.0	mg/L		02-APR-19	R4589102
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.272		0.0050	mg/L		04-APR-19	R4590644
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.44	DLHC	0.25	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	76.3	DLHC	2.5	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1620		2.0	uS/cm		02-APR-19	R4589102
<b>Fluoride in Water by IC</b>							
Fluoride (F)	7.14	DLHC	0.10	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.3			%		03-APR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-1 GH_MW-UTC_1D_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 12:45 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	18.2			meq/L		03-APR-19	
Cation Sum	17.4			meq/L		03-APR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	95.5		-100	%		03-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.259	DLHC	0.025	mg/L		28-MAR-19	R4586807
<b>Oxidation redution potential by elect.</b>							
ORP	462		-1000	mV		02-APR-19	R4589353
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.308	DLM	0.020	mg/L		04-APR-19	R4591125
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	13.7	DLHC	1.5	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	952	DLHC	20	mg/L		03-APR-19	R4590578
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.6		1.0	mg/L		03-APR-19	R4590298
<b>Turbidity</b>							
Turbidity	9.73		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	8.56		0.10	pH		02-APR-19	R4589102
L2250615-2 GH_MW-UTC_1D_WG_2019-01-01_FB-HG Sampled By: CLIENT on 27-MAR-19 @ 12:45 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-APR-19	R4590727
L2250615-3 GH_MW-UTC_1S_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 14:45 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	289		5.0	mg/L		02-APR-19	R4589102
Biochemical Oxygen Demand	<2.0		2.0	mg/L		28-MAR-19	R4589167
Carbonate (CO3)	<5.0		5.0	mg/L		02-APR-19	R4589102
Dissolved Organic Carbon	3.14	DTC	0.50	mg/L		05-APR-19	R4591205
Hydroxide (OH)	<5.0		5.0	mg/L		02-APR-19	R4589102
Total Kjeldahl Nitrogen	0.338		0.050	mg/L		03-APR-19	R4590673
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		02-APR-19	R4588784
Mercury (Hg)-Total	0.00473		0.00050	ug/L		04-APR-19	R4590727
Total Organic Carbon	2.06	DTC	0.50	mg/L		05-APR-19	R4591205
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-MAR-19	30-MAR-19	R4588519
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAR-19	29-MAR-19	R4587492
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587477
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-3 GH_MW-UTC_1S_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 14:45							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-MAR-19	30-MAR-19	R4588519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Barium (Ba)-Dissolved	0.0883		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Boron (B)-Dissolved	0.089		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cadmium (Cd)-Dissolved	0.0113		0.0050	ug/L	30-MAR-19	30-MAR-19	R4588519
Calcium (Ca)-Dissolved	70.1		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cobalt (Co)-Dissolved	0.11		0.10	ug/L	30-MAR-19	30-MAR-19	R4588519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Iron (Fe)-Dissolved	0.012		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Lithium (Li)-Dissolved	0.0405		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
Magnesium (Mg)-Dissolved	19.9		0.10	mg/L	30-MAR-19	30-MAR-19	R4588519
Manganese (Mn)-Dissolved	0.0164		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Molybdenum (Mo)-Dissolved	0.00150		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Nickel (Ni)-Dissolved	0.00053		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Potassium (K)-Dissolved	1.35		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Selenium (Se)-Dissolved	1.79		0.050	ug/L	30-MAR-19	30-MAR-19	R4588519
Silicon (Si)-Dissolved	4.56		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Sodium (Na)-Dissolved	17.3		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Strontium (Sr)-Dissolved	1.12		0.00020	mg/L	30-MAR-19	30-MAR-19	R4588519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Uranium (U)-Dissolved	0.000369		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
<b>Hardness</b>							
Hardness (as CaCO3)	257		0.50	mg/L		01-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.060		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.985		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	0.00013		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	0.00077		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	0.116		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	0.094		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	0.0608		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	71.8		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	0.00166		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	0.77		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	0.0191		0.00050	mg/L		16-APR-19	R4602283
Iron (Fe)-Total	2.70		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	0.00128		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	0.0387		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	19.5		0.10	mg/L		16-APR-19	R4602283

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-3 GH_MW-UTC_1S_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 14:45							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Total	0.0325		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	0.00186		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	0.00446		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	1.47		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	1.90		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	5.76		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	0.000191		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	16.0		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	1.10		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	0.000036		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	0.00012		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	0.016		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	0.000397		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	0.00286		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	0.0302		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.8		1.0	mg/L		03-APR-19	R4589933
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	237		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Total (as CaCO3)	237		1.0	mg/L		02-APR-19	R4589102
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0960		0.0050	mg/L		04-APR-19	R4590644
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	11.7		0.50	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	517		2.0	uS/cm		02-APR-19	R4589102
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.162		0.020	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		03-APR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.2			%		03-APR-19	
Anion Sum	5.90			meq/L		03-APR-19	
Cation Sum	5.92			meq/L		03-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0245		0.0050	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0021		0.0010	mg/L		28-MAR-19	R4586807
<b>Oxidation redution potential by elect.</b>							
ORP	479		-1000	mV		02-APR-19	R4589353
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0840		0.0020	mg/L		04-APR-19	R4591125
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	40.1		0.30	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-3 GH_MW-UTC_1S_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 14:45 Matrix: WG							
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	301	DLHC	20	mg/L		03-APR-19	R4590578
<b>Total Suspended Solids</b>							
Total Suspended Solids	59.5		1.0	mg/L		03-APR-19	R4590298
<b>Turbidity</b>							
Turbidity	34.0		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	8.06		0.10	pH		02-APR-19	R4589102
L2250615-4 GH_MW-UTC_1S_WG_2019-01-01_FB-HG Sampled By: CLIENT on 27-MAR-19 @ 14:45 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-APR-19	R4590727
L2250615-5 GH_GHER2_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 13:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	937		5.0	mg/L		02-APR-19	R4589102
Carbonate (CO3)	20.8		5.0	mg/L		02-APR-19	R4589102
Dissolved Organic Carbon	8.91		0.50	mg/L		05-APR-19	R4591205
Hydroxide (OH)	<5.0		5.0	mg/L		02-APR-19	R4589102
Total Kjeldahl Nitrogen	0.823		0.050	mg/L		03-APR-19	R4590673
Mercury (Hg)-Total	0.0000178		0.0000050	mg/L		02-APR-19	R4588784
Mercury (Hg)-Total	0.0170		0.00050	ug/L		04-APR-19	R4590727
Total Organic Carbon	8.68		0.50	mg/L		05-APR-19	R4591205
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-MAR-19	30-MAR-19	R4588519
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAR-19	29-MAR-19	R4587492
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587477
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
Aluminum (Al)-Dissolved	0.0234		0.0030	mg/L	30-MAR-19	30-MAR-19	R4588519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Arsenic (As)-Dissolved	0.00184		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Barium (Ba)-Dissolved	0.0596		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Boron (B)-Dissolved	0.831		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cadmium (Cd)-Dissolved	0.0139		0.0050	ug/L	30-MAR-19	30-MAR-19	R4588519
Calcium (Ca)-Dissolved	2.77		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Chromium (Cr)-Dissolved	0.00102		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-MAR-19	30-MAR-19	R4588519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Iron (Fe)-Dissolved	0.215		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Lithium (Li)-Dissolved	1.05		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
Magnesium (Mg)-Dissolved	0.78		0.10	mg/L	30-MAR-19	30-MAR-19	R4588519
Manganese (Mn)-Dissolved	0.0192		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Molybdenum (Mo)-Dissolved	0.0180		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-5 GH_GHER2_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 13:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Nickel (Ni)-Dissolved	0.00525		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Potassium (K)-Dissolved	1.01		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Selenium (Se)-Dissolved	0.921		0.050	ug/L	30-MAR-19	30-MAR-19	R4588519
Silicon (Si)-Dissolved	3.02		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Sodium (Na)-Dissolved	400		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Strontium (Sr)-Dissolved	0.160		0.00020	mg/L	30-MAR-19	30-MAR-19	R4588519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Uranium (U)-Dissolved	0.00554		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Vanadium (V)-Dissolved	0.00264		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
<b>Hardness</b>							
Hardness (as CaCO3)	10.2		0.50	mg/L		01-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.071		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.830		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	0.00033		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	0.00340		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	0.0702		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	0.000088		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	0.923		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	0.810		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	2.85		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	0.00280		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	1.02		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	0.00982		0.00050	mg/L		16-APR-19	R4602283
Iron (Fe)-Total	0.841		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	0.00192		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	1.08		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	0.85		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	0.0218		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	0.0191		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	0.0192		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	1.11		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	0.875		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	4.25		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	0.000059		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	408		0.050	mg/L		16-APR-19	R4602283
Strontium (Sr)-Total	0.174		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	0.000014		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	0.00071		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	0.00553		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	0.00445		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	0.232		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		03-APR-19	R4589933

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-5 GH_GHER2_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 13:00 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	768		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Carbonate (as CaCO3)	34.6		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Total (as CaCO3)	803		1.0	mg/L		02-APR-19	R4589102
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.289		0.0050	mg/L		04-APR-19	R4590644
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.28	DLHC	0.25	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	76.1	DLHC	2.5	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1600		2.0	uS/cm		02-APR-19	R4589102
<b>Fluoride in Water by IC</b>							
Fluoride (F)	6.95	DLHC	0.10	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.5			%		03-APR-19	
Anion Sum	18.9			meq/L		03-APR-19	
Cation Sum	17.7			meq/L		03-APR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	93.2		-100	%		03-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.266	DLHC	0.0010	mg/L		28-MAR-19	R4586807
<b>Oxidation redution potential by elect.</b>							
ORP	360		-1000	mV		02-APR-19	R4589353
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.414	DLM	0.020	mg/L		04-APR-19	R4591125
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	18.5	DLHC	1.5	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	968	DLHC	20	mg/L		03-APR-19	R4590578
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.1		1.0	mg/L		03-APR-19	R4590298
<b>Turbidity</b>							
Turbidity	9.90		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	8.56		0.10	pH		02-APR-19	R4589102
L2250615-6 GH_GHER2_WG_2019-01-01_FB-HG Sampled By: CLIENT on 27-MAR-19 @ 13:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-APR-19	R4590727
L2250615-7 GH_GHLRP2_WG_2019-01-01_NP Sampled By: CLIENT on 27-MAR-19 @ 13:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	<5.0		5.0	mg/L		02-APR-19	R4589102
Carbonate (CO3)	<5.0		5.0	mg/L		02-APR-19	R4589102

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-7 GH_GHLRP2_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 13:15							
Matrix: WG							
Dissolved Organic Carbon	<0.50		0.50	mg/L		05-APR-19	R4591205
Hydroxide (OH)	<5.0		5.0	mg/L		02-APR-19	R4589102
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-APR-19	R4590673
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		02-APR-19	R4588784
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-APR-19	R4590727
Total Organic Carbon	<0.50		0.50	mg/L		04-APR-19	R4591205
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-MAR-19	30-MAR-19	R4588519
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-MAR-19	29-MAR-19	R4587492
Dissolved Mercury Filtration Location	FIELD					29-MAR-19	R4587477
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-MAR-19	R4587508
Dissolved Metals Filtration Location	FIELD					02-APR-19	R4588613
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-MAR-19	30-MAR-19	R4588519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Barium (Ba)-Dissolved	0.00017	RRV	0.00010	mg/L	02-APR-19	01-APR-19	R4588579
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Boron (B)-Dissolved	0.025	RRV	0.010	mg/L	02-APR-19	01-APR-19	R4588579
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-MAR-19	30-MAR-19	R4588519
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-MAR-19	30-MAR-19	R4588519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	02-APR-19	01-APR-19	R4588579
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	30-MAR-19	30-MAR-19	R4588519
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	30-MAR-19	30-MAR-19	R4588519
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Potassium (K)-Dissolved	<0.050		0.050	mg/L	30-MAR-19	30-MAR-19	R4588519
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	30-MAR-19	30-MAR-19	R4588519
Silicon (Si)-Dissolved	1.08	RRV	0.050	mg/L	02-APR-19	01-APR-19	R4588579
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	02-APR-19	01-APR-19	R4588579
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	30-MAR-19	30-MAR-19	R4588519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-MAR-19	30-MAR-19	R4588519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-MAR-19	30-MAR-19	R4588519
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	30-MAR-19	30-MAR-19	R4588519
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-MAR-19	30-MAR-19	R4588519
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-MAR-19	30-MAR-19	R4588519
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		02-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-APR-19	R4602283
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-7 GH_GHLRP2_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 13:15							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		16-APR-19	R4602283
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Arsenic (As)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Barium (Ba)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Boron (B)-Total	0.022		0.010	mg/L		16-APR-19	R4602283
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-APR-19	R4602283
Calcium (Ca)-Total	<0.050		0.050	mg/L		16-APR-19	R4602283
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-APR-19	R4602283
Copper (Cu)-Total	<0.00050		0.00050	mg/L		17-APR-19	R4603910
Iron (Fe)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Lithium (Li)-Total	<0.0010		0.0010	mg/L		16-APR-19	R4602283
Magnesium (Mg)-Total	<0.10		0.10	mg/L		16-APR-19	R4602283
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		16-APR-19	R4602283
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-APR-19	R4602283
Potassium (K)-Total	<0.050		0.050	mg/L		16-APR-19	R4602283
Selenium (Se)-Total	<0.050		0.050	ug/L		16-APR-19	R4602283
Silicon (Si)-Total	0.82		0.10	mg/L		16-APR-19	R4602283
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Sodium (Na)-Total	<0.050		0.050	mg/L		17-APR-19	R4603910
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		16-APR-19	R4602283
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-APR-19	R4602283
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-APR-19	R4602283
Uranium (U)-Total	<0.000010		0.000010	mg/L		16-APR-19	R4602283
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-APR-19	R4602283
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-APR-19	R4602283
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.1		1.0	mg/L		03-APR-19	R4589933
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		02-APR-19	R4589102
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0131		0.0050	mg/L		04-APR-19	R4590644
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		02-APR-19	R4589102
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		03-APR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		03-APR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250615-7 GH_GHLRP2_WG_2019-01-01_NP							
Sampled By: CLIENT on 27-MAR-19 @ 13:15							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	<0.10			meq/L		03-APR-19	
Cation Sum	<0.10			meq/L		03-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		28-MAR-19	R4586807
<b>Oxidation redution potential by elect.</b>							
ORP	439		-1000	mV		02-APR-19	R4589353
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-APR-19	R4591125
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	23	DLHC	20	mg/L		03-APR-19	R4590578
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-APR-19	R4590298
<b>Turbidity</b>							
Turbidity	0.21		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	5.45		0.10	pH		02-APR-19	R4589102

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O <sub>2</sub> electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-01

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4589933							
<b>WG3020254-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.6		%		85-115	03-APR-19
<b>WG3020254-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	03-APR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4589102							
<b>WG3019394-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.4		%		85-115	02-APR-19
<b>WG3019394-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			92.8		%		85-115	02-APR-19
<b>WG3019394-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-APR-19
<b>WG3019394-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-APR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4588519							
<b>WG3017678-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.4		%		80-120	30-MAR-19
<b>WG3017678-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4602283							
<b>WG3028246-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			102.9		%		80-120	16-APR-19
<b>WG3028246-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-APR-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4589102							
<b>WG3019394-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-APR-19
<b>WG3019394-16</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	02-APR-19
<b>BOD-BC-CL</b>								
	<b>Water</b>							
Batch	R4589167							
<b>WG3019573-5</b>	<b>LCS</b>							
Biochemical Oxygen Demand			89.8		%		85-115	28-MAR-19
<b>WG3019573-4</b>	<b>MB</b>							







## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4590727</b>							
<b>WG3021260-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-APR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4588519</b>							
<b>WG3017678-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.1		%		80-120	30-MAR-19
Antimony (Sb)-Dissolved			95.6		%		80-120	30-MAR-19
Arsenic (As)-Dissolved			104.2		%		80-120	30-MAR-19
Barium (Ba)-Dissolved			103.2		%		80-120	30-MAR-19
Bismuth (Bi)-Dissolved			103.0		%		80-120	30-MAR-19
Boron (B)-Dissolved			94.4		%		80-120	30-MAR-19
Cadmium (Cd)-Dissolved			98.6		%		80-120	30-MAR-19
Calcium (Ca)-Dissolved			103.5		%		80-120	30-MAR-19
Chromium (Cr)-Dissolved			106.0		%		80-120	30-MAR-19
Cobalt (Co)-Dissolved			103.8		%		80-120	30-MAR-19
Copper (Cu)-Dissolved			103.6		%		80-120	30-MAR-19
Iron (Fe)-Dissolved			103.8		%		80-120	30-MAR-19
Lead (Pb)-Dissolved			99.5		%		80-120	30-MAR-19
Lithium (Li)-Dissolved			101.4		%		80-120	30-MAR-19
Magnesium (Mg)-Dissolved			104.0		%		80-120	30-MAR-19
Manganese (Mn)-Dissolved			105.3		%		80-120	30-MAR-19
Molybdenum (Mo)-Dissolved			98.0		%		80-120	30-MAR-19
Nickel (Ni)-Dissolved			104.5		%		80-120	30-MAR-19
Potassium (K)-Dissolved			106.5		%		80-120	30-MAR-19
Selenium (Se)-Dissolved			106.7		%		80-120	30-MAR-19
Silicon (Si)-Dissolved			101.5		%		60-140	30-MAR-19
Silver (Ag)-Dissolved			97.0		%		80-120	30-MAR-19
Sodium (Na)-Dissolved			100.1		%		80-120	30-MAR-19
Strontium (Sr)-Dissolved			106.2		%		80-120	30-MAR-19
Thallium (Tl)-Dissolved			100.6		%		80-120	30-MAR-19
Tin (Sn)-Dissolved			97.5		%		80-120	30-MAR-19
Titanium (Ti)-Dissolved			101.1		%		80-120	30-MAR-19
Uranium (U)-Dissolved			103.3		%		80-120	30-MAR-19
Vanadium (V)-Dissolved			105.8		%		80-120	30-MAR-19





## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588519</b>							
<b>WG3017678-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			102.0		%		80-120	30-MAR-19
<b>WG3017678-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			0.0015	MB-LOR	mg/L		0.001	30-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-MAR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588579</b>							
<b>WG3018868-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.4		%		80-120	01-APR-19
Antimony (Sb)-Dissolved			101.3		%		80-120	01-APR-19
Arsenic (As)-Dissolved			103.1		%		80-120	01-APR-19
Barium (Ba)-Dissolved			104.7		%		80-120	01-APR-19
Bismuth (Bi)-Dissolved			112.4		%		80-120	01-APR-19
Boron (B)-Dissolved			101.7		%		80-120	01-APR-19
Cadmium (Cd)-Dissolved			108.0		%		80-120	01-APR-19
Calcium (Ca)-Dissolved			103.3		%		80-120	01-APR-19
Chromium (Cr)-Dissolved			102.2		%		80-120	01-APR-19
Cobalt (Co)-Dissolved			104.2		%		80-120	01-APR-19
Copper (Cu)-Dissolved			101.6		%		80-120	01-APR-19
Iron (Fe)-Dissolved			98.4		%		80-120	01-APR-19
Lead (Pb)-Dissolved			104.1		%		80-120	01-APR-19
Lithium (Li)-Dissolved			103.2		%		80-120	01-APR-19
Magnesium (Mg)-Dissolved			104.0		%		80-120	01-APR-19
Manganese (Mn)-Dissolved			107.1		%		80-120	01-APR-19
Molybdenum (Mo)-Dissolved			106.1		%		80-120	01-APR-19
Nickel (Ni)-Dissolved			104.2		%		80-120	01-APR-19
Potassium (K)-Dissolved			108.0		%		80-120	01-APR-19
Selenium (Se)-Dissolved			98.8		%		80-120	01-APR-19
Silicon (Si)-Dissolved			99.2		%		60-140	01-APR-19
Silver (Ag)-Dissolved			106.5		%		80-120	01-APR-19
Sodium (Na)-Dissolved			108.9		%		80-120	01-APR-19
Strontium (Sr)-Dissolved			108.0		%		80-120	01-APR-19
Thallium (Tl)-Dissolved			103.2		%		80-120	01-APR-19
Tin (Sn)-Dissolved			104.2		%		80-120	01-APR-19
Titanium (Ti)-Dissolved			93.0		%		80-120	01-APR-19
Uranium (U)-Dissolved			107.1		%		80-120	01-APR-19
Vanadium (V)-Dissolved			104.3		%		80-120	01-APR-19
Zinc (Zn)-Dissolved			99.2		%		80-120	01-APR-19
<b>WG3018868-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588579</b>							
<b>WG3018868-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-APR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4602283</b>							
<b>WG3028246-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			105.4		%		80-120	16-APR-19
Antimony (Sb)-Total			109.3		%		80-120	16-APR-19
Arsenic (As)-Total			104.8		%		80-120	16-APR-19
Barium (Ba)-Total			110.5		%		80-120	16-APR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4602283</b>							
<b>WG3028246-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			109.8		%		80-120	16-APR-19
Boron (B)-Total			103.8		%		80-120	16-APR-19
Cadmium (Cd)-Total			97.5		%		80-120	16-APR-19
Calcium (Ca)-Total			106.5		%		80-120	16-APR-19
Chromium (Cr)-Total			109.5		%		80-120	16-APR-19
Cobalt (Co)-Total			106.1		%		80-120	16-APR-19
Copper (Cu)-Total			103.9		%		80-120	16-APR-19
Iron (Fe)-Total			105.6		%		80-120	16-APR-19
Lead (Pb)-Total			107.9		%		80-120	16-APR-19
Lithium (Li)-Total			104.2		%		80-120	16-APR-19
Magnesium (Mg)-Total			107.2		%		80-120	16-APR-19
Manganese (Mn)-Total			106.6		%		80-120	16-APR-19
Molybdenum (Mo)-Total			107.5		%		80-120	16-APR-19
Nickel (Ni)-Total			105.1		%		80-120	16-APR-19
Potassium (K)-Total			108.4		%		80-120	16-APR-19
Selenium (Se)-Total			103.3		%		80-120	16-APR-19
Silicon (Si)-Total			102.8		%		80-120	16-APR-19
Silver (Ag)-Total			106.3		%		80-120	16-APR-19
Sodium (Na)-Total			108.6		%		80-120	16-APR-19
Strontium (Sr)-Total			108.4		%		80-120	16-APR-19
Thallium (Tl)-Total			111.7		%		80-120	16-APR-19
Tin (Sn)-Total			97.7		%		80-120	16-APR-19
Titanium (Ti)-Total			100.5		%		80-120	16-APR-19
Uranium (U)-Total			105.4		%		80-120	16-APR-19
Vanadium (V)-Total			109.3		%		80-120	16-APR-19
Zinc (Zn)-Total			111.1		%		80-120	16-APR-19
<b>WG3028246-1</b>		<b>MB</b>						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	16-APR-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	16-APR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4602283</b>							
<b>WG3028246-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	16-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	16-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	16-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	16-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-APR-19
<b>Batch</b>	<b>R4603910</b>							
<b>WG3029090-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			108.6		%		80-120	17-APR-19
Antimony (Sb)-Total			112.6		%		80-120	17-APR-19
Arsenic (As)-Total			101.0		%		80-120	17-APR-19
Barium (Ba)-Total			105.5		%		80-120	17-APR-19
Bismuth (Bi)-Total			97.1		%		80-120	17-APR-19
Boron (B)-Total			89.7		%		80-120	17-APR-19
Cadmium (Cd)-Total			100.8		%		80-120	17-APR-19
Calcium (Ca)-Total			91.8		%		80-120	17-APR-19
Chromium (Cr)-Total			104.1		%		80-120	17-APR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4603910</b>							
<b>WG3029090-2</b>	<b>LCS</b>							
Cobalt (Co)-Total			104.8		%		80-120	17-APR-19
Copper (Cu)-Total			102.5		%		80-120	17-APR-19
Iron (Fe)-Total			98.7		%		80-120	17-APR-19
Lead (Pb)-Total			96.8		%		80-120	17-APR-19
Lithium (Li)-Total			96.0		%		80-120	17-APR-19
Magnesium (Mg)-Total			106.1		%		80-120	17-APR-19
Manganese (Mn)-Total			105.8		%		80-120	17-APR-19
Molybdenum (Mo)-Total			104.1		%		80-120	17-APR-19
Nickel (Ni)-Total			104.7		%		80-120	17-APR-19
Potassium (K)-Total			103.6		%		80-120	17-APR-19
Selenium (Se)-Total			102.2		%		80-120	17-APR-19
Silicon (Si)-Total			98.4		%		80-120	17-APR-19
Silver (Ag)-Total			100.5		%		80-120	17-APR-19
Sodium (Na)-Total			108.0		%		80-120	17-APR-19
Strontium (Sr)-Total			108.2		%		80-120	17-APR-19
Thallium (Tl)-Total			94.0		%		80-120	17-APR-19
Tin (Sn)-Total			101.2		%		80-120	17-APR-19
Titanium (Ti)-Total			96.4		%		80-120	17-APR-19
Uranium (U)-Total			100.7		%		80-120	17-APR-19
Vanadium (V)-Total			107.2		%		80-120	17-APR-19
Zinc (Zn)-Total			105.6		%		80-120	17-APR-19
<b>WG3029090-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	17-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	17-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	17-APR-19



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4603910</b>							
<b>WG3029090-1</b>	<b>MB</b>							
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	17-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	17-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	17-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	17-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	17-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	17-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	17-APR-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4590644</b>							
<b>WG3021264-2</b>	<b>LCS</b>							
Ammonia as N			112.1		%		85-115	04-APR-19
<b>WG3021264-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-APR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587632</b>							
<b>WG3017850-6</b>	<b>LCS</b>							
Nitrite (as N)			108.1		%		90-110	29-MAR-19
<b>WG3017850-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAR-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4587632</b>							
<b>WG3017850-6</b>	<b>LCS</b>							
Nitrate (as N)			98.2		%		90-110	29-MAR-19
<b>WG3017850-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4587632							
<b>WG3017850-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAR-19
<b>OH-CL</b>	<b>Water</b>							
Batch	R4589102							
<b>WG3019394-13 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	02-APR-19
<b>WG3019394-16 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	02-APR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4589353							
<b>WG3019535-5 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	02-APR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4591125							
<b>WG3021736-22 LCS</b>								
Phosphorus (P)-Total			105.7		%		80-120	04-APR-19
<b>WG3021736-26 LCS</b>								
Phosphorus (P)-Total			106.4		%		80-120	04-APR-19
<b>WG3021736-21 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-APR-19
<b>WG3021736-25 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-APR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4589102							
<b>WG3019394-14 LCS</b>								
pH			7.00		pH		6.9-7.1	02-APR-19
<b>WG3019394-17 LCS</b>								
pH			7.00		pH		6.9-7.1	02-APR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4586807							
<b>WG3016552-30 LCS</b>								
Orthophosphate-Dissolved (as P)			101.1		%		80-120	28-MAR-19
<b>WG3016552-29 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4587632							
<b>WG3017850-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	29-MAR-19
<b>WG3017850-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAR-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4590578							
<b>WG3019953-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.2		%		85-115	03-APR-19
<b>WG3019953-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	03-APR-19
<b>TKN-L-F-CL</b>								
Batch	R4590673							
<b>WG3020419-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.0		%		75-125	03-APR-19
<b>WG3020419-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.5		%		75-125	03-APR-19
<b>WG3020419-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.1		%		75-125	03-APR-19
<b>WG3020419-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-APR-19
<b>WG3020419-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-APR-19
<b>WG3020419-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-APR-19
<b>TSS-L-CL</b>								
Batch	R4590298							
<b>WG3020004-14</b>	<b>LCS</b>							
Total Suspended Solids			101.1		%		85-115	03-APR-19
<b>WG3020004-13</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-APR-19
<b>TURBIDITY-CL</b>								
Batch	R4587546							
<b>WG3017616-11</b>	<b>LCS</b>							
Turbidity			98.5		%		85-115	29-MAR-19
<b>WG3017616-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-MAR-19

# Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

---

# Quality Control Report

Workorder: L2250615

Report Date: 12-NOV-19

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	27-MAR-19 12:45	02-APR-19 09:15	0.25	140	hours	EHTR-FM
	3	27-MAR-19 14:45	02-APR-19 09:15	0.25	138	hours	EHTR-FM
	5	27-MAR-19 13:00	02-APR-19 09:15	0.25	140	hours	EHTR-FM
	7	27-MAR-19 13:15	02-APR-19 09:15	0.25	140	hours	EHTR-FM
pH							
	1	27-MAR-19 12:45	02-APR-19 09:00	0.25	140	hours	EHTR-FM
	3	27-MAR-19 14:45	02-APR-19 09:00	0.25	138	hours	EHTR-FM
	5	27-MAR-19 13:00	02-APR-19 09:00	0.25	140	hours	EHTR-FM
	7	27-MAR-19 13:15	02-APR-19 09:00	0.25	140	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2250615 were received on 28-MAR-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excl	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Jennifer.Kropp@teck.c	X	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Lelgh.Stickney@teck.c	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	VPO00610013			
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-3341			Phone Number	403 407 1794							

SAMPLE DETAILS							ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N	N	N	N	N

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Sampler's Signature	Mobile #	Date/Time



L2250615-COFC

*Ar* 3/28/19 (50)

50  
3

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Jennifer.Kropp@teck.c	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Leigh.Stickney@teck.c	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	VPO00610013		
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-865-3341			Phone Number	403 407 1794						

SAMPLE DETAILS							ANALYSIS REQUESTED																			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	BOD	Y	N	Y	N	Y	N	N	N	N	
GH_MW-UTC_ID_WG_2019-01-01_NP	GH_MW-UTC_ID	WG		2019/03/27	12:45	G	7	1	1	1	1	1	1		1	1										
GH_MW-UTC_ID_WG_2019-01-01_FB-HG	GH_MW-UTC_ID	WG		2019/03/27	12:45	G	7								1											
GH_MW-UTC_1S_WG_2019-01-01_NP	GH_MW-UTC_1S	WG		2019/03/27	14:45	G	1	1	1	1	1	1	1		1	1										
GH_MW-UTC_1S_WG_2019-01-01_FB-HG	GH_MW-UTC_1S	WG		2019/03/27	14:45	G	1								1											
GH_GHER2_WG_2019-01-01_NP	GH_GHER2	WG		2019/03/27	13:00			1	1	1	1	1	1		1											
GH_GHER2_WG_2019-01-01_FB-HG	GH_GHER2	WG		2019/03/27	13:00										1											
GH_GHLRP2_WG_2019-01-01_NP	GH_LRP2	WG		2019/03/27	13:15			1	1	1	1	1	1		1											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Ar</i>	3/28/19 (50)

SERVICE REQUEST (rush subject to availability)		Sampler's Name	Mobile #
Regular (default)	X		
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
		Sampler's Signature	Date/Time

30  
3



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 29-MAR-19  
Report Date: 12-NOV-19 16:54 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-3048

## Certificate of Analysis

**Lab Work Order #:** L2250961  
**Project P.O. #:** VPO00610013  
**Job Reference:** GREENHILLS OPERATION  
**C of C Numbers:** gho\_qtr\_gw\_2019-01  
**Legal Site Desc:**

**Comments:** ADDITIONAL 07-NOV-19 12:08

12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-1 GH_MW-GHC-1S_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 13:35							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	302		5.0	mg/L		29-MAR-19	R4587296
Biochemical Oxygen Demand	<2.0		2.0	mg/L		29-MAR-19	R4589948
Carbonate (CO3)	<5.0		5.0	mg/L		29-MAR-19	R4587296
Dissolved Organic Carbon	2.30		0.50	mg/L		29-MAR-19	R4587598
Hydroxide (OH)	<5.0		5.0	mg/L		29-MAR-19	R4587296
Total Kjeldahl Nitrogen	0.188		0.050	mg/L		01-APR-19	R4588300
Mercury (Hg)-Total	0.00284		0.00050	ug/L		01-APR-19	R4588440
Total Organic Carbon	2.68		0.50	mg/L		29-MAR-19	R4587598
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-APR-19	04-APR-19	R4590824
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590205
Dissolved Mercury Filtration Location	FIELD					04-APR-19	R4590803
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-APR-19	04-APR-19	R4590824
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Arsenic (As)-Dissolved	0.00096		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Barium (Ba)-Dissolved	0.0294		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Boron (B)-Dissolved	0.032		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Cadmium (Cd)-Dissolved	0.0289		0.0050	ug/L	04-APR-19	04-APR-19	R4590824
Calcium (Ca)-Dissolved	256		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Cobalt (Co)-Dissolved	0.40		0.10	ug/L	04-APR-19	04-APR-19	R4590824
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Iron (Fe)-Dissolved	0.759		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Lithium (Li)-Dissolved	0.0197		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
Magnesium (Mg)-Dissolved	60.9		0.10	mg/L	04-APR-19	04-APR-19	R4590824
Manganese (Mn)-Dissolved	0.194		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Molybdenum (Mo)-Dissolved	0.000883		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Nickel (Ni)-Dissolved	0.00155		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Potassium (K)-Dissolved	1.85		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Selenium (Se)-Dissolved	0.141		0.050	ug/L	04-APR-19	04-APR-19	R4590824
Silicon (Si)-Dissolved	5.17		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Sodium (Na)-Dissolved	4.44		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Strontium (Sr)-Dissolved	0.688		0.00020	mg/L	04-APR-19	04-APR-19	R4590824
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Uranium (U)-Dissolved	0.00177		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	890		0.50	mg/L		05-APR-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-1 GH_MW-GHC-1S_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 13:35							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		01-APR-19	R4588424
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-APR-19	R4588409
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.240		0.0030	mg/L		01-APR-19	R4588424
Antimony (Sb)-Total	0.00010		0.00010	mg/L		01-APR-19	R4588424
Arsenic (As)-Total	0.00184		0.00010	mg/L		01-APR-19	R4588424
Barium (Ba)-Total	0.0340		0.00010	mg/L		01-APR-19	R4588424
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Boron (B)-Total	0.037		0.010	mg/L		01-APR-19	R4588424
Cadmium (Cd)-Total	0.0400		0.0050	ug/L		01-APR-19	R4588424
Calcium (Ca)-Total	234		0.050	mg/L		01-APR-19	R4588424
Chromium (Cr)-Total	0.00061		0.00010	mg/L		01-APR-19	R4588424
Cobalt (Co)-Total	0.81		0.10	ug/L		01-APR-19	R4588424
Copper (Cu)-Total	0.00089		0.00050	mg/L		01-APR-19	R4588424
Iron (Fe)-Total	1.81		0.010	mg/L		01-APR-19	R4588424
Lead (Pb)-Total	0.000399		0.000050	mg/L		01-APR-19	R4588424
Lithium (Li)-Total	0.0203		0.0010	mg/L		01-APR-19	R4588424
Magnesium (Mg)-Total	59.6		0.10	mg/L		01-APR-19	R4588424
Manganese (Mn)-Total	0.222		0.00010	mg/L		01-APR-19	R4588424
Molybdenum (Mo)-Total	0.00103		0.000050	mg/L		01-APR-19	R4588424
Nickel (Ni)-Total	0.00264		0.00050	mg/L		01-APR-19	R4588424
Potassium (K)-Total	1.93		0.050	mg/L		01-APR-19	R4588424
Selenium (Se)-Total	0.260		0.050	ug/L		01-APR-19	R4588424
Silicon (Si)-Total	5.90		0.10	mg/L		01-APR-19	R4588424
Silver (Ag)-Total	<0.000010		0.000010	mg/L		01-APR-19	R4588424
Sodium (Na)-Total	4.70		0.050	mg/L		01-APR-19	R4588424
Strontium (Sr)-Total	0.663		0.00020	mg/L		01-APR-19	R4588424
Thallium (Tl)-Total	0.000024		0.000010	mg/L		01-APR-19	R4588424
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-APR-19	R4588424
Uranium (U)-Total	0.00173		0.000010	mg/L		01-APR-19	R4588424
Vanadium (V)-Total	0.00092		0.00050	mg/L		01-APR-19	R4588424
Zinc (Zn)-Total	0.0068		0.0030	mg/L		01-APR-19	R4588424
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.2		2.0	mg/L		29-MAR-19	R4587357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	248		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Total (as CaCO3)	248		1.0	mg/L		29-MAR-19	R4587296
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0399		0.0050	mg/L		29-MAR-19	R4587286
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.0	DLHC	2.5	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1370		2.0	uS/cm		29-MAR-19	R4587296
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.14	DLHC	0.10	mg/L		29-MAR-19	R4587632

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-1 GH_MW-GHC-1S_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 13:35 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		05-APR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		05-APR-19	
Anion Sum	17.9			meq/L		05-APR-19	
Cation Sum	18.1			meq/L		05-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-MAR-19	R4587553
<b>Oxidation redution potential by elect.</b>							
ORP	428		-1000	mV		30-MAR-19	R4587555
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0193		0.0020	mg/L		30-MAR-19	R4587587
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	612	DLHC	1.5	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1110	DLHC	20	mg/L		29-MAR-19	R4587644
<b>Total Suspended Solids</b>							
Total Suspended Solids	42.3		1.0	mg/L		29-MAR-19	R4587643
<b>Turbidity</b>							
Turbidity	40.6		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	7.54		0.10	pH		29-MAR-19	R4587296
L2250961-2 GH_MW-GHC-1S_WG_2019-01-01_FB-HG Sampled By: CLIENT on 28-MAR-19 @ 13:35 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-APR-19	R4588440
L2250961-3 GH_MW-GHC-1D_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 11:35 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	364		5.0	mg/L		29-MAR-19	R4587296
Biochemical Oxygen Demand	<2.0		2.0	mg/L		29-MAR-19	R4589948
Carbonate (CO3)	<5.0		5.0	mg/L		29-MAR-19	R4587296
Dissolved Organic Carbon	1.64		0.50	mg/L		29-MAR-19	R4587598
Hydroxide (OH)	<5.0		5.0	mg/L		29-MAR-19	R4587296
Total Kjeldahl Nitrogen	0.088		0.050	mg/L		01-APR-19	R4588300
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-APR-19	R4588440
Total Organic Carbon	1.38		0.50	mg/L		29-MAR-19	R4587598
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-APR-19	04-APR-19	R4590824
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-APR-19	04-APR-19	R4590205
Dissolved Mercury Filtration Location	FIELD					04-APR-19	R4590803
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-3 GH_MW-GHC-1D_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 11:35							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-APR-19	04-APR-19	R4590824
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Barium (Ba)-Dissolved	0.0874		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Boron (B)-Dissolved	0.031		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Cadmium (Cd)-Dissolved	0.0207		0.0050	ug/L	04-APR-19	04-APR-19	R4590824
Calcium (Ca)-Dissolved	169		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	04-APR-19	04-APR-19	R4590824
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
Magnesium (Mg)-Dissolved	56.2		0.10	mg/L	04-APR-19	04-APR-19	R4590824
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Molybdenum (Mo)-Dissolved	0.000672		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Nickel (Ni)-Dissolved	0.00072		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Potassium (K)-Dissolved	1.43		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Selenium (Se)-Dissolved	3.39		0.050	ug/L	04-APR-19	04-APR-19	R4590824
Silicon (Si)-Dissolved	4.28		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Sodium (Na)-Dissolved	4.92		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Strontium (Sr)-Dissolved	0.497		0.00020	mg/L	04-APR-19	04-APR-19	R4590824
Thallium (Tl)-Dissolved	0.000027		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Uranium (U)-Dissolved	0.00279		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	655		0.50	mg/L		05-APR-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		01-APR-19	R4588424
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-APR-19	R4588409
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0185		0.0030	mg/L		01-APR-19	R4588424
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Arsenic (As)-Total	0.00012		0.00010	mg/L		01-APR-19	R4588424
Barium (Ba)-Total	0.0891		0.00010	mg/L		01-APR-19	R4588424
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Boron (B)-Total	0.037		0.010	mg/L		01-APR-19	R4588424
Cadmium (Cd)-Total	0.0218		0.0050	ug/L		01-APR-19	R4588424
Calcium (Ca)-Total	156		0.050	mg/L		01-APR-19	R4588424
Chromium (Cr)-Total	0.00025		0.00010	mg/L		01-APR-19	R4588424
Cobalt (Co)-Total	<0.10		0.10	ug/L		01-APR-19	R4588424
Copper (Cu)-Total	0.00415		0.00050	mg/L		01-APR-19	R4588424
Iron (Fe)-Total	0.167		0.010	mg/L		01-APR-19	R4588424
Lead (Pb)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-3 GH_MW-GHC-1D_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 11:35							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Lithium (Li)-Total	0.0176		0.0010	mg/L		01-APR-19	R4588424
Magnesium (Mg)-Total	56.6		0.10	mg/L		01-APR-19	R4588424
Manganese (Mn)-Total	0.00063		0.00010	mg/L		01-APR-19	R4588424
Molybdenum (Mo)-Total	0.000710		0.000050	mg/L		01-APR-19	R4588424
Nickel (Ni)-Total	0.00064		0.00050	mg/L		01-APR-19	R4588424
Potassium (K)-Total	1.43		0.050	mg/L		01-APR-19	R4588424
Selenium (Se)-Total	3.70		0.050	ug/L		01-APR-19	R4588424
Silicon (Si)-Total	4.63		0.10	mg/L		01-APR-19	R4588424
Silver (Ag)-Total	<0.000010		0.000010	mg/L		01-APR-19	R4588424
Sodium (Na)-Total	5.16		0.050	mg/L		01-APR-19	R4588424
Strontium (Sr)-Total	0.496		0.00020	mg/L		01-APR-19	R4588424
Thallium (Tl)-Total	0.000025		0.000010	mg/L		01-APR-19	R4588424
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-APR-19	R4588424
Uranium (U)-Total	0.00283		0.000010	mg/L		01-APR-19	R4588424
Vanadium (V)-Total	<0.00050		0.00050	mg/L		01-APR-19	R4588424
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		01-APR-19	R4588424
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<2.0		2.0	mg/L		29-MAR-19	R4587357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	298		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Total (as CaCO3)	298		1.0	mg/L		29-MAR-19	R4587296
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0110		0.0050	mg/L		29-MAR-19	R4587286
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.0	DLHC	2.5	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1060		2.0	uS/cm		29-MAR-19	R4587296
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.53	DLHC	0.10	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Ion Balance	97.4		-100	%		05-APR-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.3			%		05-APR-19	
Anion Sum	13.7			meq/L		05-APR-19	
Cation Sum	13.3			meq/L		05-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.092	DLHC	0.025	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0029		0.0010	mg/L		30-MAR-19	R4587553
<b>Oxidation redution potential by elect.</b>							
ORP	438		-1000	mV		30-MAR-19	R4587555
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0063		0.0020	mg/L		30-MAR-19	R4587587
<b>Sulfate in Water by IC</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-3 GH_MW-GHC-1D_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 11:35 Matrix: WG <b>Sulfate in Water by IC</b> Sulfate (SO4)	365	DLHC	1.5	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b> Total Dissolved Solids	776	DLHC	20	mg/L		29-MAR-19	R4587644
<b>Total Suspended Solids</b> Total Suspended Solids	2.3		1.0	mg/L		29-MAR-19	R4587643
<b>Turbidity</b> Turbidity	3.30		0.10	NTU		29-MAR-19	R4587546
<b>pH</b> pH	7.48		0.10	pH		29-MAR-19	R4587296
L2250961-4 GH_MW-GHC-1D_WG_2019-01-01_FB-HG Sampled By: CLIENT on 28-MAR-19 @ 11:35 Matrix: WG <b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-APR-19	R4588440
L2250961-5 GH_GHLRP1_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 12:00 Matrix: WG <b>Miscellaneous Parameters</b> Bicarbonate (HCO3) Carbonate (CO3) Dissolved Organic Carbon Hydroxide (OH) Total Kjeldahl Nitrogen Mercury (Hg)-Total Total Organic Carbon	<5.0 <5.0 <0.50 <5.0 <0.050 <0.00050 <0.50		5.0 5.0 0.50 5.0 0.050 0.00050 0.50	mg/L mg/L mg/L mg/L mg/L ug/L mg/L		29-MAR-19 29-MAR-19 29-MAR-19 29-MAR-19 01-APR-19 01-APR-19 29-MAR-19	R4587296 R4587296 R4587598 R4587296 R4588300 R4588440 R4587598
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved Dissolved Metals Filtration Location	<0.020 FIELD		0.020	ug/L	04-APR-19	04-APR-19 04-APR-19	R4590824 R4590813
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved Dissolved Mercury Filtration Location	<0.0000050 FIELD		0.0000050	mg/L	04-APR-19	04-APR-19 04-APR-19	R4590205 R4590803
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location Aluminum (Al)-Dissolved Antimony (Sb)-Dissolved Arsenic (As)-Dissolved Barium (Ba)-Dissolved Bismuth (Bi)-Dissolved Boron (B)-Dissolved Cadmium (Cd)-Dissolved Calcium (Ca)-Dissolved Chromium (Cr)-Dissolved Cobalt (Co)-Dissolved Copper (Cu)-Dissolved Iron (Fe)-Dissolved Lead (Pb)-Dissolved Lithium (Li)-Dissolved Magnesium (Mg)-Dissolved Manganese (Mn)-Dissolved	FIELD <0.0030 <0.00010 <0.00010 0.00555 <0.000050 0.022 <0.0050 0.129 <0.00010 <0.10 <0.00050 <0.010 <0.00050 <0.0010 <0.10 0.00016	RRV RRV RRV RC:FD	0.0030 0.00010 0.00010 0.00010 0.000050 0.010 0.0050 0.050 0.00010 0.10 0.00050 0.010 0.00050 0.0010 0.10 0.00010	mg/L mg/L mg/L mg/L mg/L mg/L ug/L mg/L mg/L ug/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19	04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19 04-APR-19	R4590813 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824 R4590824

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-5 GH_GHLRP1_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Potassium (K)-Dissolved	<0.050		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	04-APR-19	04-APR-19	R4590824
Silicon (Si)-Dissolved	1.48	RRV	0.050	mg/L	04-APR-19	04-APR-19	R4590824
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Sodium (Na)-Dissolved	0.502	RRV	0.050	mg/L	04-APR-19	04-APR-19	R4590824
Strontium (Sr)-Dissolved	0.00023	RRV	0.00020	mg/L	04-APR-19	04-APR-19	R4590824
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Tin (Sn)-Dissolved	0.00031	RRV	0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		05-APR-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		01-APR-19	R4588424
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-APR-19	R4588409
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		01-APR-19	R4588424
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Arsenic (As)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Barium (Ba)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Boron (B)-Total	0.025	RRV	0.010	mg/L		01-APR-19	R4588424
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		01-APR-19	R4588424
Calcium (Ca)-Total	0.059	RRV	0.050	mg/L		01-APR-19	R4588424
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Cobalt (Co)-Total	<0.10		0.10	ug/L		01-APR-19	R4588424
Copper (Cu)-Total	<0.00050		0.00050	mg/L		01-APR-19	R4588424
Iron (Fe)-Total	<0.010		0.010	mg/L		01-APR-19	R4588424
Lead (Pb)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Lithium (Li)-Total	<0.0010		0.0010	mg/L		01-APR-19	R4588424
Magnesium (Mg)-Total	<0.10		0.10	mg/L		01-APR-19	R4588424
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		01-APR-19	R4588424
Potassium (K)-Total	<0.050		0.050	mg/L		01-APR-19	R4588424
Selenium (Se)-Total	<0.050		0.050	ug/L		01-APR-19	R4588424
Silicon (Si)-Total	1.15	RRV	0.10	mg/L		01-APR-19	R4588424
Silver (Ag)-Total	<0.000010		0.000010	mg/L		01-APR-19	R4588424
Sodium (Na)-Total	<0.050		0.050	mg/L		01-APR-19	R4588424
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		01-APR-19	R4588424
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		01-APR-19	R4588424
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-APR-19	R4588424
Uranium (U)-Total	<0.000010		0.000010	mg/L		01-APR-19	R4588424
Vanadium (V)-Total	<0.00050		0.00050	mg/L		01-APR-19	R4588424
Zinc (Zn)-Total	0.0080	RRV	0.0030	mg/L		01-APR-19	R4588424

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-5 GH_GHLRP1_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 12:00 Matrix: WG <b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12.8		2.0	mg/L		29-MAR-19	R4587357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		29-MAR-19	R4587286
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		29-MAR-19	R4587296
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		05-APR-19	
Anion Sum	<0.10			meq/L		05-APR-19	
Cation Sum	<0.10			meq/L		05-APR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		05-APR-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-MAR-19	R4587553
<b>Oxidation redution potential by elect.</b>							
ORP	425		-1000	mV		30-MAR-19	R4587555
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		30-MAR-19	R4587587
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		29-MAR-19	R4587644
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		29-MAR-19	R4587643
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		29-MAR-19	R4587546
<b>pH</b>							
pH	5.48		0.10	pH		29-MAR-19	R4587296
L2250961-6 GH_GHER1_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 12:00 Matrix: WG <b>Miscellaneous Parameters</b>							
Bicarbonate (HCO3)	360		5.0	mg/L		29-MAR-19	R4587296
Carbonate (CO3)	<5.0		5.0	mg/L		29-MAR-19	R4587296
Dissolved Organic Carbon	1.16		0.50	mg/L		29-MAR-19	R4587598
Hydroxide (OH)	<5.0		5.0	mg/L		29-MAR-19	R4587296

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-6 GH_GHER1_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 12:00							
Matrix: WG							
Total Kjeldahl Nitrogen	0.087		0.050	mg/L		01-APR-19	R4588300
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-APR-19	R4588440
Total Organic Carbon	1.25		0.50	mg/L		29-MAR-19	R4587598
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-APR-19	04-APR-19	R4590824
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590205
Dissolved Mercury Filtration Location	FIELD					04-APR-19	R4590803
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-APR-19	R4590813
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-APR-19	04-APR-19	R4590824
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Barium (Ba)-Dissolved	0.0875		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Boron (B)-Dissolved	0.032		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Cadmium (Cd)-Dissolved	0.0194		0.0050	ug/L	04-APR-19	04-APR-19	R4590824
Calcium (Ca)-Dissolved	170		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	04-APR-19	04-APR-19	R4590824
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Lithium (Li)-Dissolved	0.0174		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
Magnesium (Mg)-Dissolved	56.1		0.10	mg/L	04-APR-19	04-APR-19	R4590824
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Molybdenum (Mo)-Dissolved	0.000668		0.000050	mg/L	04-APR-19	04-APR-19	R4590824
Nickel (Ni)-Dissolved	0.00073		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Potassium (K)-Dissolved	1.42		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Selenium (Se)-Dissolved	3.70		0.050	ug/L	04-APR-19	04-APR-19	R4590824
Silicon (Si)-Dissolved	4.27		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Sodium (Na)-Dissolved	5.11		0.050	mg/L	04-APR-19	04-APR-19	R4590824
Strontium (Sr)-Dissolved	0.501		0.00020	mg/L	04-APR-19	04-APR-19	R4590824
Thallium (Tl)-Dissolved	0.000024		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-APR-19	04-APR-19	R4590824
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-APR-19	04-APR-19	R4590824
Uranium (U)-Dissolved	0.00281		0.000010	mg/L	04-APR-19	04-APR-19	R4590824
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-APR-19	04-APR-19	R4590824
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-APR-19	04-APR-19	R4590824
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	656		0.50	mg/L		05-APR-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		01-APR-19	R4588424
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588409
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0285		0.0030	mg/L		01-APR-19	R4588424
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-6 GH_GHER1_WG_2019-01-01_NP							
Sampled By: CLIENT on 28-MAR-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00018		0.00010	mg/L		01-APR-19	R4588424
Barium (Ba)-Total	0.0876		0.00010	mg/L		01-APR-19	R4588424
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Boron (B)-Total	0.037		0.010	mg/L		01-APR-19	R4588424
Cadmium (Cd)-Total	0.0214		0.0050	ug/L		01-APR-19	R4588424
Calcium (Ca)-Total	155		0.050	mg/L		01-APR-19	R4588424
Chromium (Cr)-Total	0.00017		0.00010	mg/L		01-APR-19	R4588424
Cobalt (Co)-Total	<0.10		0.10	ug/L		01-APR-19	R4588424
Copper (Cu)-Total	0.00083		0.00050	mg/L		01-APR-19	R4588424
Iron (Fe)-Total	0.307		0.010	mg/L		01-APR-19	R4588424
Lead (Pb)-Total	<0.000050		0.000050	mg/L		01-APR-19	R4588424
Lithium (Li)-Total	0.0175		0.0010	mg/L		01-APR-19	R4588424
Magnesium (Mg)-Total	56.7		0.10	mg/L		01-APR-19	R4588424
Manganese (Mn)-Total	0.00108		0.00010	mg/L		01-APR-19	R4588424
Molybdenum (Mo)-Total	0.000692		0.000050	mg/L		01-APR-19	R4588424
Nickel (Ni)-Total	0.00071		0.00050	mg/L		01-APR-19	R4588424
Potassium (K)-Total	1.41		0.050	mg/L		01-APR-19	R4588424
Selenium (Se)-Total	3.60		0.050	ug/L		01-APR-19	R4588424
Silicon (Si)-Total	4.56		0.10	mg/L		01-APR-19	R4588424
Silver (Ag)-Total	0.000023		0.000010	mg/L		01-APR-19	R4588424
Sodium (Na)-Total	5.16		0.050	mg/L		01-APR-19	R4588424
Strontium (Sr)-Total	0.496		0.00020	mg/L		01-APR-19	R4588424
Thallium (Tl)-Total	0.000024		0.000010	mg/L		01-APR-19	R4588424
Tin (Sn)-Total	<0.00010		0.00010	mg/L		01-APR-19	R4588424
Titanium (Ti)-Total	<0.010		0.010	mg/L		01-APR-19	R4588424
Uranium (U)-Total	0.00278		0.000010	mg/L		01-APR-19	R4588424
Vanadium (V)-Total	<0.00050		0.00050	mg/L		01-APR-19	R4588424
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		01-APR-19	R4588424
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<2.0		2.0	mg/L		29-MAR-19	R4587357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	295		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		29-MAR-19	R4587296
Alkalinity, Total (as CaCO3)	295		1.0	mg/L		29-MAR-19	R4587296
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0053		0.0050	mg/L		29-MAR-19	R4587286
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		29-MAR-19	R4587632
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.8	DLHC	2.5	mg/L		29-MAR-19	R4587632
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1060		2.0	uS/cm		29-MAR-19	R4587296
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.49	DLHC	0.10	mg/L		29-MAR-19	R4587632
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.7			%		05-APR-19	
Anion Sum	13.2			meq/L		05-APR-19	
Cation Sum	13.4			meq/L		05-APR-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		05-APR-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2250961-6 GH_GHER1_WG_2019-01-01_NP Sampled By: CLIENT on 28-MAR-19 @ 12:00 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.105	DLHC	0.025	mg/L		29-MAR-19	R4587632
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-MAR-19	R4587632
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0044		0.0010	mg/L		30-MAR-19	R4587553
<b>Oxidation redution potential by elect.</b> ORP	419		-1000	mV		30-MAR-19	R4587555
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0063		0.0020	mg/L		30-MAR-19	R4587587
<b>Sulfate in Water by IC</b> Sulfate (SO4)	345	DLHC	1.5	mg/L		29-MAR-19	R4587632
<b>Total Dissolved Solids</b> Total Dissolved Solids	796	DLHC	20	mg/L		29-MAR-19	R4587644
<b>Total Suspended Solids</b> Total Suspended Solids	2.5		1.0	mg/L		29-MAR-19	R4587643
<b>Turbidity</b> Turbidity	4.98		0.10	NTU		29-MAR-19	R4587546
<b>pH</b> pH	7.54		0.10	pH		29-MAR-19	R4587296
L2250961-7 GH_GHER1_WG_2019-01-01_FB-HG Sampled By: CLIENT on 28-MAR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		01-APR-19	R4588440

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
LPML	TOTAL METALS TO BE TAKEN FROM ROUTINE BOTTLE - Lab-Preserved for Total Metals. Sample received with pH > 2 and preserved at the lab. Total Metals results may be biased low.

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RC:FD	Filter shows some physical damage. Use result with caution
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BIC-CL	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day Incub.-O <sub>2</sub> electrode
This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CO3-CL	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OH-CL	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

gho\_qtr\_gw\_2019-01

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587357</b>							
<b>WG3017303-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.4		%		85-115	29-MAR-19
<b>WG3017303-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	29-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587296</b>							
<b>WG3017301-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.2		%		85-115	29-MAR-19
<b>WG3017301-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4590824</b>							
<b>WG3021461-3</b>	<b>DUP</b>	<b>L2250961-6</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	04-APR-19
<b>WG3021461-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.7		%		80-120	04-APR-19
<b>WG3021461-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-APR-19
<b>WG3021461-4</b>	<b>MS</b>	<b>L2250961-1</b>						
Beryllium (Be)-Dissolved			95.8		%		70-130	04-APR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588424</b>							
<b>WG3018011-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			103.4		%		80-120	01-APR-19
<b>WG3018011-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-APR-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587296</b>							
<b>WG3017301-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	29-MAR-19
<b>BOD-BC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4589948</b>							
<b>WG3020443-3</b>	<b>DUP</b>	<b>L2250961-3</b>						
Biochemical Oxygen Demand		<2.0	<2.0	RPD-NA	mg/L	N/A	20	29-MAR-19
<b>WG3020443-2</b>	<b>LCS</b>							
Biochemical Oxygen Demand			89.6		%		85-115	29-MAR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BOD-BC-CL</b> <b>Water</b>								
Batch            R4589948								
WG3020443-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	29-MAR-19
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch            R4587632								
WG3017850-11 DUP								
Bromide (Br)		L2250961-5 <0.050	<0.050	RPD-NA	mg/L	N/A	20	29-MAR-19
WG3017850-10 LCS								
Bromide (Br)			98.9		%		85-115	29-MAR-19
WG3017850-9 MB								
Bromide (Br)			<0.050		mg/L		0.05	29-MAR-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch            R4587598								
WG3017809-2 LCS								
Dissolved Organic Carbon			107.3		%		80-120	29-MAR-19
WG3017809-6 LCS								
Dissolved Organic Carbon			108.9		%		80-120	29-MAR-19
WG3017809-1 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
WG3017809-5 MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch            R4587598								
WG3017809-2 LCS								
Total Organic Carbon			112.5		%		80-120	29-MAR-19
WG3017809-6 LCS								
Total Organic Carbon			114.3		%		80-120	29-MAR-19
WG3017809-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
WG3017809-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	29-MAR-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch            R4587632								
WG3017850-11 DUP								
Chloride (Cl)		L2250961-5 <0.50	<0.50	RPD-NA	mg/L	N/A	20	29-MAR-19
WG3017850-10 LCS								
Chloride (Cl)			100.4		%		90-110	29-MAR-19
WG3017850-9 MB								



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4587632							
<b>WG3017850-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	29-MAR-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-7 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	29-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4587296							
<b>WG3017301-8 LCS</b>								
Conductivity (@ 25C)			100.7		%		90-110	29-MAR-19
<b>WG3017301-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4587632							
<b>WG3017850-11 DUP</b>		<b>L2250961-5</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	29-MAR-19
<b>WG3017850-10 LCS</b>								
Fluoride (F)			104.5		%		90-110	29-MAR-19
<b>WG3017850-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	29-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4590205							
<b>WG3021450-6 LCS</b>								
Mercury (Hg)-Dissolved			98.4		%		80-120	04-APR-19
<b>WG3021450-5 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-APR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4588409							
<b>WG3018658-3 DUP</b>		<b>L2250961-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	01-APR-19
<b>WG3018658-2 LCS</b>								
Mercury (Hg)-Total			97.5		%		80-120	01-APR-19
<b>WG3018658-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	01-APR-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4588440</b>							
<b>WG3018660-7</b>	<b>DUP</b>	<b>L2250961-3</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	01-APR-19
<b>WG3018660-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.7		%		80-120	01-APR-19
<b>WG3018660-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	01-APR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4590824</b>							
<b>WG3021461-3</b>	<b>DUP</b>	<b>L2250961-6</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	04-APR-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Barium (Ba)-Dissolved		0.0875	0.0898		mg/L	2.6	20	04-APR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-APR-19
Boron (B)-Dissolved		0.032	0.032		mg/L	2.1	20	04-APR-19
Cadmium (Cd)-Dissolved		0.0000194	0.0000162		mg/L	18	20	04-APR-19
Calcium (Ca)-Dissolved		170	167		mg/L	2.0	20	04-APR-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-APR-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-APR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-APR-19
Lithium (Li)-Dissolved		0.0174	0.0171		mg/L	1.6	20	04-APR-19
Magnesium (Mg)-Dissolved		56.1	57.3		mg/L	2.0	20	04-APR-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Molybdenum (Mo)-Dissolved		0.000668	0.000719		mg/L	7.4	20	04-APR-19
Nickel (Ni)-Dissolved		0.00073	0.00076		mg/L	4.5	20	04-APR-19
Potassium (K)-Dissolved		1.42	1.44		mg/L	1.7	20	04-APR-19
Selenium (Se)-Dissolved		0.00370	0.00352		mg/L	4.9	20	04-APR-19
Silicon (Si)-Dissolved		4.27	4.34		mg/L	1.5	20	04-APR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-APR-19
Sodium (Na)-Dissolved		5.11	4.98		mg/L	2.6	20	04-APR-19
Strontium (Sr)-Dissolved		0.501	0.512		mg/L	2.2	20	04-APR-19
Thallium (Tl)-Dissolved		0.000024	0.000024		mg/L	3.7	20	04-APR-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-APR-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-APR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4590824</b>							
<b>WG3021461-3</b>	<b>DUP</b>	<b>L2250961-6</b>						
Uranium (U)-Dissolved		0.00281	0.00287		mg/L	2.3	20	04-APR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-APR-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-APR-19
<b>WG3021461-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.9		%		80-120	04-APR-19
Antimony (Sb)-Dissolved			99.1		%		80-120	04-APR-19
Arsenic (As)-Dissolved			97.7		%		80-120	04-APR-19
Barium (Ba)-Dissolved			103.0		%		80-120	04-APR-19
Bismuth (Bi)-Dissolved			104.6		%		80-120	04-APR-19
Boron (B)-Dissolved			90.0		%		80-120	04-APR-19
Cadmium (Cd)-Dissolved			102.4		%		80-120	04-APR-19
Calcium (Ca)-Dissolved			98.2		%		80-120	04-APR-19
Chromium (Cr)-Dissolved			101.6		%		80-120	04-APR-19
Cobalt (Co)-Dissolved			99.7		%		80-120	04-APR-19
Copper (Cu)-Dissolved			99.2		%		80-120	04-APR-19
Iron (Fe)-Dissolved			98.9		%		80-120	04-APR-19
Lead (Pb)-Dissolved			97.1		%		80-120	04-APR-19
Lithium (Li)-Dissolved			96.4		%		80-120	04-APR-19
Magnesium (Mg)-Dissolved			103.7		%		80-120	04-APR-19
Manganese (Mn)-Dissolved			97.4		%		80-120	04-APR-19
Molybdenum (Mo)-Dissolved			102.0		%		80-120	04-APR-19
Nickel (Ni)-Dissolved			101.0		%		80-120	04-APR-19
Potassium (K)-Dissolved			101.8		%		80-120	04-APR-19
Selenium (Se)-Dissolved			100.8		%		80-120	04-APR-19
Silicon (Si)-Dissolved			95.2		%		60-140	04-APR-19
Silver (Ag)-Dissolved			100.7		%		80-120	04-APR-19
Sodium (Na)-Dissolved			110.9		%		80-120	04-APR-19
Strontium (Sr)-Dissolved			98.7		%		80-120	04-APR-19
Thallium (Tl)-Dissolved			100.0		%		80-120	04-APR-19
Tin (Sn)-Dissolved			99.98		%		80-120	04-APR-19
Titanium (Ti)-Dissolved			98.1		%		80-120	04-APR-19
Uranium (U)-Dissolved			99.3		%		80-120	04-APR-19
Vanadium (V)-Dissolved			102.1		%		80-120	04-APR-19
Zinc (Zn)-Dissolved			95.2		%		80-120	04-APR-19
<b>WG3021461-1</b>	<b>MB</b>	<b>NP</b>						



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4590824</b>							
<b>WG3021461-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-APR-19
<b>WG3021461-4</b>	<b>MS</b>	<b>L2250961-1</b>						
Aluminum (Al)-Dissolved			97.4		%		70-130	04-APR-19
Antimony (Sb)-Dissolved			101.1		%		70-130	04-APR-19
Arsenic (As)-Dissolved			100.1		%		70-130	04-APR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4590824</b>							
<b>WG3021461-4 MS</b>		<b>L2250961-1</b>						
Barium (Ba)-Dissolved			N/A	MS-B	%		-	04-APR-19
Bismuth (Bi)-Dissolved			84.4		%		70-130	04-APR-19
Boron (B)-Dissolved			88.4		%		70-130	04-APR-19
Cadmium (Cd)-Dissolved			98.5		%		70-130	04-APR-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	04-APR-19
Chromium (Cr)-Dissolved			101.3		%		70-130	04-APR-19
Cobalt (Co)-Dissolved			95.5		%		70-130	04-APR-19
Copper (Cu)-Dissolved			94.3		%		70-130	04-APR-19
Iron (Fe)-Dissolved			97.8		%		70-130	04-APR-19
Lead (Pb)-Dissolved			92.7		%		70-130	04-APR-19
Lithium (Li)-Dissolved			98.8		%		70-130	04-APR-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	04-APR-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	04-APR-19
Molybdenum (Mo)-Dissolved			99.9		%		70-130	04-APR-19
Nickel (Ni)-Dissolved			95.0		%		70-130	04-APR-19
Potassium (K)-Dissolved			106.3		%		70-130	04-APR-19
Selenium (Se)-Dissolved			107.7		%		70-130	04-APR-19
Silicon (Si)-Dissolved			90.6		%		70-130	04-APR-19
Silver (Ag)-Dissolved			101.3		%		70-130	04-APR-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	04-APR-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	04-APR-19
Thallium (Tl)-Dissolved			90.1		%		70-130	04-APR-19
Tin (Sn)-Dissolved			99.1		%		70-130	04-APR-19
Titanium (Ti)-Dissolved			99.3		%		70-130	04-APR-19
Uranium (U)-Dissolved			95.2		%		70-130	04-APR-19
Vanadium (V)-Dissolved			103.7		%		70-130	04-APR-19
Zinc (Zn)-Dissolved			93.2		%		70-130	04-APR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588424</b>							
<b>WG3018011-2 LCS</b>								
Aluminum (Al)-Total			104.0		%		80-120	01-APR-19
Antimony (Sb)-Total			100.9		%		80-120	01-APR-19
Arsenic (As)-Total			100.2		%		80-120	01-APR-19
Barium (Ba)-Total			104.3		%		80-120	01-APR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588424</b>							
<b>WG3018011-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			97.9		%		80-120	01-APR-19
Boron (B)-Total			106.0		%		80-120	01-APR-19
Cadmium (Cd)-Total			101.6		%		80-120	01-APR-19
Calcium (Ca)-Total			102.6		%		80-120	01-APR-19
Chromium (Cr)-Total			101.9		%		80-120	01-APR-19
Cobalt (Co)-Total			102.0		%		80-120	01-APR-19
Copper (Cu)-Total			102.0		%		80-120	01-APR-19
Iron (Fe)-Total			101.1		%		80-120	01-APR-19
Lead (Pb)-Total			96.8		%		80-120	01-APR-19
Lithium (Li)-Total			102.2		%		80-120	01-APR-19
Magnesium (Mg)-Total			104.9		%		80-120	01-APR-19
Manganese (Mn)-Total			103.4		%		80-120	01-APR-19
Molybdenum (Mo)-Total			102.0		%		80-120	01-APR-19
Nickel (Ni)-Total			101.3		%		80-120	01-APR-19
Potassium (K)-Total			101.2		%		80-120	01-APR-19
Selenium (Se)-Total			100.2		%		80-120	01-APR-19
Silicon (Si)-Total			100.6		%		80-120	01-APR-19
Silver (Ag)-Total			99.2		%		80-120	01-APR-19
Sodium (Na)-Total			105.7		%		80-120	01-APR-19
Strontium (Sr)-Total			102.4		%		80-120	01-APR-19
Thallium (Tl)-Total			97.0		%		80-120	01-APR-19
Tin (Sn)-Total			100.5		%		80-120	01-APR-19
Titanium (Ti)-Total			97.2		%		80-120	01-APR-19
Uranium (U)-Total			96.9		%		80-120	01-APR-19
Vanadium (V)-Total			104.2		%		80-120	01-APR-19
Zinc (Zn)-Total			96.6		%		80-120	01-APR-19
<b>WG3018011-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	01-APR-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	01-APR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4588424</b>							
<b>WG3018011-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-APR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587286</b>							
<b>WG3017432-2</b>	<b>LCS</b>							
Ammonia as N			98.3		%		85-115	29-MAR-19
<b>WG3017432-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4587632</b>							
<b>WG3017850-11</b>	<b>DUP</b>	<b>L2250961-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	29-MAR-19
<b>WG3017850-10</b>	<b>LCS</b>							
Nitrite (as N)			108.1		%		90-110	29-MAR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
Batch R4587632								
WG3017850-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAR-19
<b>NO3-L-IC-N-CL</b>								
Batch R4587632								
WG3017850-11	DUP	L2250961-5						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	29-MAR-19
WG3017850-10	LCS							
Nitrate (as N)			99.6		%		90-110	29-MAR-19
WG3017850-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAR-19
<b>OH-CL</b>								
Batch R4587296								
WG3017301-7	MB							
Hydroxide (OH)			<5.0		mg/L		5	29-MAR-19
<b>ORP-CL</b>								
Batch R4587555								
WG3017756-1	CRM	CL-ORP						
ORP			223		mV		210-230	30-MAR-19
WG3017756-2	DUP	L2250961-6						
ORP		419	422	J	mV	2.5	15	30-MAR-19
<b>P-T-L-COL-CL</b>								
Batch R4587587								
WG3017788-3	DUP	L2250961-6						
Phosphorus (P)-Total		0.0063	0.0060		mg/L	4.2	20	30-MAR-19
WG3017788-2	LCS							
Phosphorus (P)-Total			105.6		%		80-120	30-MAR-19
WG3017788-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-MAR-19
WG3017788-4	MS	L2250961-6						
Phosphorus (P)-Total			80.2		%		70-130	30-MAR-19
<b>PH-CL</b>								
Batch R4587296								
WG3017301-8	LCS							
pH			7.05		pH		6.9-7.1	29-MAR-19



## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch      R4587553								
<b>WG3017731-2</b> <b>LCS</b>								
Orthophosphate-Dissolved (as P)			102.1		%		80-120	30-MAR-19
<b>WG3017731-1</b> <b>MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-MAR-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch      R4587632								
<b>WG3017850-10</b> <b>LCS</b>								
Sulfate (SO4)			101.9		%		90-110	29-MAR-19
<b>WG3017850-9</b> <b>MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAR-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch      R4587644								
<b>WG3017094-8</b> <b>LCS</b>								
Total Dissolved Solids			97.4		%		85-115	29-MAR-19
<b>WG3017094-7</b> <b>MB</b>								
Total Dissolved Solids			<10		mg/L		10	29-MAR-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch      R4588300								
<b>WG3018589-3</b> <b>DUP</b>								
Total Kjeldahl Nitrogen		<b>L2250961-6</b> 0.087	0.066	J	mg/L	0.021	0.1	01-APR-19
<b>WG3018589-2</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			97.4		%		75-125	01-APR-19
<b>WG3018589-1</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-APR-19
<b>WG3018589-4</b> <b>MS</b>								
Total Kjeldahl Nitrogen		<b>L2250961-6</b>	90.0		%		70-130	01-APR-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch      R4587643								
<b>WG3017062-4</b> <b>LCS</b>								
Total Suspended Solids			110.0		%		85-115	29-MAR-19
<b>WG3017062-3</b> <b>MB</b>								
Total Suspended Solids			<1.0		mg/L		1	29-MAR-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch      R4587546								
<b>WG3017616-17</b> <b>LCS</b>								
Turbidity			97.5		%		85-115	29-MAR-19
<b>WG3017616-16</b> <b>MB</b>								





## Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4587546							
<b>WG3017616-16 MB</b>								
Turbidity			<0.10		NTU		0.1	29-MAR-19

# Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2250961

Report Date: 12-NOV-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	28-MAR-19 13:35	30-MAR-19 09:30	0.25	44	hours	EHTR-FM
	3	28-MAR-19 11:35	30-MAR-19 09:30	0.25	46	hours	EHTR-FM
	5	28-MAR-19 12:00	30-MAR-19 09:30	0.25	46	hours	EHTR-FM
	6	28-MAR-19 12:00	30-MAR-19 09:30	0.25	46	hours	EHTR-FM
pH							
	1	28-MAR-19 13:35	29-MAR-19 08:00	0.25	18	hours	EHTR-FM
	3	28-MAR-19 11:35	29-MAR-19 14:00	0.25	26	hours	EHTR-FM
	5	28-MAR-19 12:00	29-MAR-19 14:00	0.25	26	hours	EHTR-FM
	6	28-MAR-19 12:00	29-MAR-19 14:00	0.25	26	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2250961 were received on 29-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

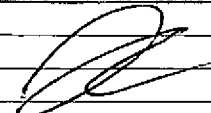
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-01-01\_NP**      TURNAROUND TIME:      RUSH: **24 HOUR**

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jennifer Kropp			Lab Contact	Lyudmyla Shvets		Email 1:	Jennifer.Kropp@teck.com	X	X
Email	Jennifer.Kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:			
Address	P.O. BOX 5000			Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610 013	
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	250-865-3341			Phone Number	403 407 1794					

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered - F: Field, L: Lab, FL: Field & Lab, N: None				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	Ultra Trace HG	BOD			
GH_MW-GHC-1S_WG_2019-01-01_NP	GH_MW-GHC-1D	WG		3/28/2019	13:35:00 PM	G	9	1	1	1	1	1	1	1	1	1			
GH_MW-GHC-1S_WG_2019-01-01_FB-HG	GH_MW-GHC-1S	WG		3/28/2019	13:35	G	1								1				
GH_MW-GHC-1D_WG_2019-01-01_NP	GH_MW-GHC-1D	WG		3/28/2019	11:35	G	9	1	1	1	1	1	1	1	1	1			
GH_MW-GHC-1D_WG_2019-01-01_FB-HG	GH_MW-GHC-1S	WG		3/28/2019	11:35	G	1								1				
GH_GHLRP1_WG_2019-01-01_NP	GH_GHLRP1	WG		3/28/2019		G	8	1	1	1	1	1	1	1	1	1			
GH_GHER1_WG_2019-01-01_NP	GH_GHER1	WG		3/28/2019		G	8	1	1	1	1	1	1	1	1	1			
GH_GHER1_WG_2019-01-01_FB-HG	GH_GHER1	WG		3/28/2019		G	1								1				
		WG				G													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please take Total metal from Routine Bottle				3/29 9:00

SERVICE REQUEST (rush - subject to availability)	Regular (default)	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
				X				

92



SNC-Lavalin  
ATTN: Brian Hansen  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-JAN-19  
Report Date: 08-JUL-19 18:03 (MT)  
Version: FINAL REV. 3

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2226699  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers: 17-700124  
Legal Site Desc:

Comments: 08-JUL-2019 Added Bicarbonate (HCO<sub>3</sub>), Carbonate (CO<sub>3</sub>) and Hydroxide (OH) parameters.  
14-FEB-2019 Sample ID prefix adjusted to GH\_MW from GHMW.  
04-FEB-2019 Additional analyses requested (pH, EC, Alkalinity, TDS, Bromide, Chloride, Fluoride, Sulphate, Nitrite, Nitrate, Total Nitrogen, Ammonia, TKN, Total Phosphorous).

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2226699-1	L2226699-2	L2226699-3
		Description	GW	GW	GW
		Sampled Date	29-JAN-19	29-JAN-19	29-JAN-19
		Sampled Time	15:22	14:35	14:50
		Client ID	GH_MW-MC-2D-190129	GH_MW-MC-2S-190129	MW19-A-190129
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Hardness (as CaCO3) (mg/L)	28.5	374	373	
	Total Suspended Solids (mg/L)	17.9	1.9	1.2	
	Total Dissolved Solids (mg/L)	1130 <sup>DLHC</sup>	457 <sup>DLHC</sup>	453 <sup>DLHC</sup>	
	Turbidity (NTU)	264	2.69	3.14	
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	491	311	311	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	68.2	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	559	311	311	
	Ammonia as N (mg/L)	0.541 <sup>DLHC</sup>	0.0081	0.0061	
	Bicarbonate (HCO3) (mg/L)	598	380	379	
	Bromide (Br) (mg/L)	0.80 <sup>DLHC</sup>	<0.050	<0.050	
	Carbonate (CO3) (mg/L)	40.9	<5.0	<5.0	
	Chloride (Cl) (mg/L)	259 <sup>DLHC</sup>	3.59	3.58	
	Conductivity (EC) (uS/cm)	1870	692	694	
	Fluoride (F) (mg/L)	3.24 <sup>DLHC</sup>	0.128	0.126	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Nitrate and Nitrite (as N) (mg/L)	0.122	0.517	0.516	
	Nitrate (as N) (mg/L)	0.039 <sup>DLHC</sup>	0.516	0.514	
	Nitrite (as N) (mg/L)	0.0827 <sup>DLHC</sup>	0.0013	0.0013	
	Total Kjeldahl Nitrogen (mg/L)	1.07 <sup>DLM</sup>	0.091	0.103	
	Total Nitrogen (mg/L)	1.19	0.608	0.619	
	pH (pH)	8.91	8.03	7.99	
	Orthophosphate-Dissolved (as P) (mg/L)	0.579 <sup>DLHC</sup>	0.0064	0.0064	
	Phosphorus (P)-Total (mg/L)	0.739 <sup>DLHC</sup>	0.0073	0.0072	
Sulfate (SO4) (mg/L)	23.6 <sup>DLHC</sup>	88.5	88.1		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	6.64	1.63	1.67	
	Total Organic Carbon (mg/L)	7.4 <sup>DLM</sup>	1.52	1.49	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0387 <sup>DLDS</sup>	0.0022	0.0019	
	Antimony (Sb)-Dissolved (mg/L)	0.00149 <sup>DLDS</sup>	0.00016	0.00016	
	Arsenic (As)-Dissolved (mg/L)	0.0175 <sup>DLDS</sup>	0.00025	0.00025	
	Barium (Ba)-Dissolved (mg/L)	0.0864 <sup>DLDS</sup>	0.125	0.129	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.655 <sup>DLDS</sup>	0.027	0.027	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2226699-1 GW 29-JAN-19 15:22 GH_MW-MC-2D-190129	L2226699-2 GW 29-JAN-19 14:35 GH_MW-MC-2S-190129	L2226699-3 GW 29-JAN-19 14:50 MW19-A-190129	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Cadmium (Cd)-Dissolved (mg/L)	DLDS <0.000025	0.0000588	0.0000644	
	Calcium (Ca)-Dissolved (mg/L)	DLDS 6.03	96.6	96.3	
	Chromium (Cr)-Dissolved (mg/L)	DLDS <0.00050	0.00023	0.00019	
	Cobalt (Co)-Dissolved (mg/L)	DLDS <0.00050	0.00021	0.00019	
	Copper (Cu)-Dissolved (mg/L)	DLDS <0.0010	0.00036	0.00037	
	Iron (Fe)-Dissolved (mg/L)	DLDS <0.050	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	DLDS <0.00025	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	DLDS 0.947	0.0252	0.0256	
	Magnesium (Mg)-Dissolved (mg/L)	DLM 3.25	32.3	32.3	
	Manganese (Mn)-Dissolved (mg/L)	DLDS 0.0528	0.0300	0.0292	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	DLDS 0.00898	0.000942	0.000962	
	Nickel (Ni)-Dissolved (mg/L)	DLDS <0.0025	0.00132	0.00129	
	Phosphorus (P)-Dissolved (mg/L)	DLDS 0.66	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	DLDS 2.82	1.28	1.26	
	Selenium (Se)-Dissolved (mg/L)	DLDS 0.0114	0.00270	0.00260	
	Silicon (Si)-Dissolved (mg/L)	DLM 3.79	4.09	4.07	
	Silver (Ag)-Dissolved (mg/L)	DLDS <0.000050	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	DLDS 424	14.5	14.1	
	Strontium (Sr)-Dissolved (mg/L)	DLDS 0.129	0.296	0.301	
	Sulfur (S)-Dissolved (mg/L)	DLM 390	30.8	30.3	
	Thallium (Tl)-Dissolved (mg/L)	DLDS <0.000050	0.000018	0.000016	
	Tin (Sn)-Dissolved (mg/L)	DLDS <0.00050	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	DLDS <0.0015	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	DLDS 0.00268	0.00123	0.00120	
	Vanadium (V)-Dissolved (mg/L)	DLDS <0.0025	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	DLDS <0.0050	0.0012	0.0013	
	Zirconium (Zr)-Dissolved (mg/L)	DLDS 0.00110	<0.00030	<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
---------------------	-----------	-----------	-----------------------------

#### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-DIS-ICP-CL</b>	Water	Dissolved Metals by ICPOES	APHA 3030B/EPA 6010D
"This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the			



## Reference Information

American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (APHA Method 3030B) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH/EC/ALK-CL</b>	Water	pH, Conductivity and Total Alkalinity	APHA 4500H,2510,2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode.			
Alkalinity measurement is based on the sample's capacity to neutralize acid			
Conductivity measurement is based on the sample's capacity to convey an electric current			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

17-700124

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Brian Hansen

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4497767</b>							
<b>WG2985882-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	08-FEB-19
<b>WG2985882-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-FEB-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.96		%		80-120	03-FEB-19
<b>WG2982190-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4494052</b>							
<b>WG2984769-2</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484834</b>							
<b>WG2982159-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			92.7		%		80-120	02-FEB-19
<b>WG2982159-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-FEB-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484834</b>							
<b>WG2982159-10</b>	<b>LCS</b>							
Total Organic Carbon			90.5		%		80-120	02-FEB-19
<b>WG2982159-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-FEB-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4494052</b>							
<b>WG2984769-2</b>	<b>LCS</b>							
Chloride (Cl)			102.4		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	06-FEB-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4494052</b>							
<b>WG2984769-2</b>	<b>LCS</b>							
Fluoride (F)			105.4		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	06-FEB-19
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4480427</b>							
<b>WG2980852-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			119.0		%		80-120	31-JAN-19
<b>WG2980852-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-JAN-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			107.0		%		80-120	03-FEB-19
Antimony (Sb)-Dissolved			108.9		%		80-120	03-FEB-19
Arsenic (As)-Dissolved			100.9		%		80-120	03-FEB-19
Barium (Ba)-Dissolved			103.7		%		80-120	03-FEB-19
Bismuth (Bi)-Dissolved			102.8		%		80-120	03-FEB-19
Boron (B)-Dissolved			99.3		%		80-120	03-FEB-19
Cadmium (Cd)-Dissolved			100.9		%		80-120	03-FEB-19
Calcium (Ca)-Dissolved			101.7		%		80-120	03-FEB-19
Chromium (Cr)-Dissolved			105.7		%		80-120	03-FEB-19
Cobalt (Co)-Dissolved			105.1		%		80-120	03-FEB-19
Copper (Cu)-Dissolved			104.5		%		80-120	03-FEB-19
Iron (Fe)-Dissolved			107.3		%		80-120	03-FEB-19
Lead (Pb)-Dissolved			103.8		%		80-120	03-FEB-19
Lithium (Li)-Dissolved			112.4		%		80-120	03-FEB-19
Manganese (Mn)-Dissolved			105.3		%		80-120	03-FEB-19
Molybdenum (Mo)-Dissolved			104.6		%		80-120	03-FEB-19
Nickel (Ni)-Dissolved			102.4		%		80-120	03-FEB-19
Phosphorus (P)-Dissolved			104.2		%		70-130	03-FEB-19
Potassium (K)-Dissolved			107.5		%		80-120	03-FEB-19
Selenium (Se)-Dissolved			96.7		%		80-120	03-FEB-19
Silver (Ag)-Dissolved			101.0		%		80-120	03-FEB-19
Sodium (Na)-Dissolved			107.9		%		80-120	03-FEB-19
Strontium (Sr)-Dissolved			108.3		%		80-120	03-FEB-19



## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-2</b>	<b>LCS</b>	<b>TMRM</b>						
Thallium (Tl)-Dissolved			101.1		%		80-120	03-FEB-19
Tin (Sn)-Dissolved			104.4		%		80-120	03-FEB-19
Titanium (Ti)-Dissolved			101.4		%		80-120	03-FEB-19
Uranium (U)-Dissolved			98.2		%		80-120	03-FEB-19
Vanadium (V)-Dissolved			107.6		%		80-120	03-FEB-19
Zinc (Zn)-Dissolved			101.5		%		80-120	03-FEB-19
Zirconium (Zr)-Dissolved			99.9		%		80-120	03-FEB-19
<b>WG2982190-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-19



## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-1</b>	<b>MB</b>							
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	03-FEB-19
<b>MET-DIS-ICP-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4484577</b>							
<b>WG2981998-7</b>	<b>DUP</b>	<b>L2226699-1</b>						
Magnesium (Mg)-Dissolved		3.25	3.21		mg/L	1.4	20	02-FEB-19
Silicon (Si)-Dissolved		3.79	3.78		mg/L	0.2	20	02-FEB-19
Sulfur (S)-Dissolved		390	408		mg/L	4.3	20	02-FEB-19
<b>WG2981998-2</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			97.6		%		80-120	02-FEB-19
Silicon (Si)-Dissolved			97.3		%		80-120	02-FEB-19
Sulfur (S)-Dissolved			99.0		%		80-120	02-FEB-19
<b>WG2981998-6</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			99.3		%		80-120	02-FEB-19
Silicon (Si)-Dissolved			98.4		%		80-120	02-FEB-19
Sulfur (S)-Dissolved			99.7		%		80-120	02-FEB-19
<b>WG2981998-1</b>	<b>MB</b>							
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	02-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Sulfur (S)-Dissolved			<1.0		mg/L		1	02-FEB-19
<b>WG2981998-5</b>	<b>MB</b>							
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	02-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Sulfur (S)-Dissolved			<1.0		mg/L		1	02-FEB-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4498660</b>							
<b>WG2986229-2</b>	<b>LCS</b>							
Ammonia as N			89.7		%		85-115	09-FEB-19
<b>WG2986229-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-FEB-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4494052							
<b>WG2984769-2</b>	<b>LCS</b>							
Nitrite (as N)			106.6		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	06-FEB-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4494052							
<b>WG2984769-2</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-FEB-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4496770							
<b>WG2985675-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.2		%		80-120	08-FEB-19
<b>WG2985675-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-FEB-19
<b>PH/EC/ALK-CL</b>		<b>Water</b>						
Batch	R4497767							
<b>WG2985882-7</b>	<b>DUP</b>	<b>L2226699-3</b>						
pH		7.99	8.03	J	pH	0.04	0.2	08-FEB-19
Conductivity (EC)		694	695		uS/cm	0.1	10	08-FEB-19
Bicarbonate (HCO3)		379	381		mg/L	0.5	20	08-FEB-19
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	08-FEB-19
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	08-FEB-19
Alkalinity, Total (as CaCO3)		311	312		mg/L	0.5	20	08-FEB-19
<b>WG2985882-2</b>	<b>LCS</b>							
Conductivity (EC)			100.6		%		90-110	02-AUG-18
Alkalinity, Total (as CaCO3)			99.1		%		85-115	02-AUG-18
<b>WG2985882-1</b>	<b>MB</b>							
Conductivity (EC)			<2.0		uS/cm		2	02-AUG-18
Bicarbonate (HCO3)			<5.0		mg/L		5	02-AUG-18
Carbonate (CO3)			<5.0		mg/L		5	02-AUG-18
Hydroxide (OH)			<5.0		mg/L		5	02-AUG-18
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	02-AUG-18
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						







## Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4477831							
WG2980013-4	MB							
Turbidity			<0.10		NTU		0.1	30-JAN-19

# Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2226699

Report Date: 08-JUL-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Total Dissolved Solids							
	1	29-JAN-19 15:22	06-FEB-19 09:30	7	8	days	EHT
	2	29-JAN-19 14:35	06-FEB-19 09:30	7	8	days	EHT
	3	29-JAN-19 14:50	06-FEB-19 09:30	7	8	days	EHT
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	1	29-JAN-19 15:22	06-FEB-19 10:01	3	8	days	EHT
	2	29-JAN-19 14:35	06-FEB-19 10:01	3	8	days	EHT
	3	29-JAN-19 14:50	06-FEB-19 10:01	3	8	days	EHT
Nitrite in Water by IC (Low Level)							
	1	29-JAN-19 15:22	06-FEB-19 10:01	3	8	days	EHT
	2	29-JAN-19 14:35	06-FEB-19 10:01	3	8	days	EHT
	3	29-JAN-19 14:50	06-FEB-19 10:01	3	8	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2226699 were received on 30-JAN-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2226699-COFC

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distrib.</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>		
Company: <u>SNC-Lavalin</u>		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular (R) <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply		
Contact: <u>Brian Hansen</u>		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/> 1 Business day [E-100%] <input type="checkbox"/>		
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2-200%] <input type="checkbox"/>		
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/> (Laboratory opening fees may apply)		
Street: <u>305-773 580 Leke St.</u>		Email 1 or Fax: <u>Brian.Hansen@SncLavalin.ca</u>		Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm		
City/Province: <u>Nelson BC</u>		Email 2: <u>Vicky.Lipinski@SncLavalin.ca</u>		For tests that can not be performed according to the service level selected, you will be contacted.		
Postal Code: <u>V1L 4C6</u>		Email 3: <u>Cam.Jaeger@teck.com</u>		<b>Analysis Request</b>		
Invoice To: Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				
Company: <u>Teck Coal</u>		Email 1 or Fax: <u>cam.jaeger@teck.com</u>				
Contact: <u>Cam Jaeger</u>		Email 2:				
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>				
ALS Account # / Quote #:		AFE/Cost Center:		PO#		
Job #: <u>658004</u>		Major/Minor Code:		Routing Code:		
PO / AFE:		Requisitioner:				
LSD:		Location:				
ALS Lab Work Order # (lab use only):		ALS Contact: <u>Faithyn Gardner</u>		Sampler: <u>RAS</u>		
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type		
	<u>GHMW-MC-2D-190129</u>	<u>201-01-19</u>	<u>15:22</u>	<u>GW</u>	<u>XXX</u>	<u>5</u>
	<u>GHMW-MC-2S-190129</u>	<u>↓</u>	<u>17:35</u>	<u>GW</u>	<u>X</u>	<u>↓</u>
	<u>MW19-A-190129</u>	<u>↓</u>	<u>14:50</u>	<u>GW</u>	<u>X</u>	<u>↓</u>
<b>Drinking Water (DW) Samples (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>		
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>		
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>		
				Cooling Initiated <input type="checkbox"/>		
				INITIAL COOLER TEMPERATURES °C		
				FINAL COOLER TEMPERATURES °C		
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>		
Released by: <u>[Signature]</u>	Date: <u>190129</u>	Time:	Received by:	Date:	Time:	Received by: <u>[Signature]</u>
						Date: <u>2019/01/30</u>

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Brian Hansen  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 31-JAN-19  
Report Date: 08-JUL-19 17:58 (MT)  
Version: FINAL REV. 3

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2227320  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers: 17-700123  
Legal Site Desc:

Comments: 08-JUL-2019 Added Bicarbonate (HCO<sub>3</sub>), Carbonate (CO<sub>3</sub>) and Hydroxide (OH) parameters.  
04-FEB-2019 Additional analyses requested (pH, EC, Alkalinity, TDS, Bromide, Chloride, Fluoride, Sulphate, Nitrite, Nitrate, Total Nitrogen, Ammonia, TKN, Total Phosphorous.

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2227320-1 WATER 30-JAN-19 15:50 GH-MW-WOLF-1D- 190130	L2227320-2 WATER 30-JAN-19 14:45 GH-MW-WOLF-2D- 190130	L2227320-3 WATER 30-JAN-19 10:25 GH-MW-WILLOW- 3D-190130	L2227320-4 WATER 30-JAN-19 10:30 GH-MW-WILLOW- 3S-190130	L2227320-5 WATER 30-JAN-19 13:23 GH-MW-WILLOW- 2D-190130	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Hardness (as CaCO3) (mg/L)	208	327	196	228	112
	Total Suspended Solids (mg/L)	14800 <sup>DLHC</sup>	120 <sup>DLHC</sup>	326 <sup>DLHC</sup>	20.3 <sup>DLHC</sup>	4820 <sup>DLHC</sup>
	Total Dissolved Solids (mg/L)	295 <sup>DLHC</sup>	442 <sup>DLHC</sup>	382 <sup>DLHC</sup>	262 <sup>DLHC</sup>	401 <sup>DLHC</sup>
	Turbidity (NTU)	>4000	156	392	27.5	3540
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	530	304	306	241	462
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	6.2
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	530	304	306	241	468
	Ammonia as N (mg/L)	0.453	0.0654	0.238	0.0239	0.256
	Bicarbonate (HCO3) (mg/L)	647	370 <sup>DLHC</sup>	374	294	564
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>	<0.050	<0.050	0.079
	Carbonate (CO3) (mg/L)	<5.0	<5.0 <sup>DLHC</sup>	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.41	5.2 <sup>DLHC</sup>	2.18	<0.50	14.8
	Conductivity (EC) (uS/cm)	470	623 <sup>DLHC</sup>	517	444	690
	Fluoride (F) (mg/L)	0.493	0.34 <sup>DLHC</sup>	0.661	0.160	1.04
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Nitrate and Nitrite (as N) (mg/L)	<0.050	<0.050 <sup>DLHC</sup>	<0.050	0.062	<0.050
	Nitrate (as N) (mg/L)	0.0291	<0.025 <sup>DLHC</sup>	<0.0050	0.0608	<0.0050
	Nitrite (as N) (mg/L)	0.0143	<0.0050 <sup>DLHC</sup>	0.0013	0.0015	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	21.3	0.302	0.344	<0.050	2.33
	Total Nitrogen (mg/L)	21.3	0.302	0.345	0.062	2.33
	pH (pH)	8.10	8.12	8.13	8.11	8.35
	Orthophosphate-Dissolved (as P) (mg/L)	0.0032 <sup>DLHC</sup>	0.0103 <sup>RRV</sup>	0.0060 <sup>DLHC</sup>	0.0114 <sup>RRV</sup>	0.0071 <sup>DLHC</sup>
	Phosphorus (P)-Total (mg/L)	15.4	0.168 <sup>DLHC</sup>	0.440 <sup>DLHC</sup>	0.0353	2.03 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	30.9	66.1 <sup>DLHC</sup>	20.9	16.1	0.66
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.72	6.77	2.08	1.87	0.92
	Total Organic Carbon (mg/L)	610	13.2	16.6	2.15	36 <sup>DLHC</sup>
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	1.30	0.0030	0.0036	0.0032	0.0022
	Antimony (Sb)-Dissolved (mg/L)	0.00033	0.00040	0.00028	0.00010	0.00030
	Arsenic (As)-Dissolved (mg/L)	0.00193	0.00088	0.00174	0.00028	0.00091
	Barium (Ba)-Dissolved (mg/L)	0.171	0.0758	0.513	0.195	0.790
	Beryllium (Be)-Dissolved (mg/L)	0.000104	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.159	0.054	0.122	0.011	0.330
	Cadmium (Cd)-Dissolved (mg/L)	0.000292	0.0000241	<0.0000050	0.0000212	0.0000056

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2227320-6	L2227320-7	L2227320-8
		Description	WATER	WATER	WATER
		Sampled Date	30-JAN-19	30-JAN-19	30-JAN-19
		Sampled Time	13:10	12:12	12:45
		Client ID	GH-MW-MC-1S-190130	GH-MW-WILLOW-1D-190130	GH-MW-MC-1D-190130
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Hardness (as CaCO <sub>3</sub> ) (mg/L)	157	93.8	119	
	Total Suspended Solids (mg/L)	<1.0	3530 <sup>DLHC</sup>	56.5	
	Total Dissolved Solids (mg/L)	197 <sup>DLHC</sup>	399 <sup>DLHC</sup>	237 <sup>DLHC</sup>	
	Turbidity (NTU)	1.04	1060	4.34	
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	161	381	187	
	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	161	381	187	
	Ammonia as N (mg/L)	0.0222	0.148	0.0263	
	Bicarbonate (HCO <sub>3</sub> ) (mg/L)	197	465	228	
	Bromide (Br) (mg/L)	<0.050	0.111	0.062	
	Carbonate (CO <sub>3</sub> ) (mg/L)	<5.0	<5.0	<5.0	
	Chloride (Cl) (mg/L)	<0.50	22.8	11.4	
	Conductivity (EC) (uS/cm)	311	652	367	
	Fluoride (F) (mg/L)	0.153	1.26	0.769	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	
	Nitrate and Nitrite (as N) (mg/L)	0.116	<0.050	<0.050	
	Nitrate (as N) (mg/L)	0.114	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	0.0017	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.880	0.079	
	Total Nitrogen (mg/L)	0.116	0.880	0.079	
	pH (pH)	8.19	8.26	8.25	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014	0.0061	0.0011	
	Phosphorus (P)-Total (mg/L)	0.0024	0.836 <sup>DLHC</sup>	0.0054	
Sulfate (SO <sub>4</sub> ) (mg/L)	23.3	5.17	2.94		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.88	0.59	
	Total Organic Carbon (mg/L)	0.60	16.0	0.82	
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0052	0.0020	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00029	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00077	0.00049	
	Barium (Ba)-Dissolved (mg/L)	0.0514	1.28	0.630	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	0.241	0.071	
	Cadmium (Cd)-Dissolved (mg/L)	0.0000052	<0.0000050	<0.0000050	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2227320-1 WATER 30-JAN-19 15:50 GH-MW-WOLF-1D- 190130	L2227320-2 WATER 30-JAN-19 14:45 GH-MW-WOLF-2D- 190130	L2227320-3 WATER 30-JAN-19 10:25 GH-MW-WILLOW- 3D-190130	L2227320-4 WATER 30-JAN-19 10:30 GH-MW-WILLOW- 3S-190130	L2227320-5 WATER 30-JAN-19 13:23 GH-MW-WILLOW- 2D-190130
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Calcium (Ca)-Dissolved (mg/L)	50.2	80.9	43.7	56.7	23.3
Chromium (Cr)-Dissolved (mg/L)	0.00224	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00154	0.00073	0.00070	<0.00010	0.00014
Copper (Cu)-Dissolved (mg/L)	0.00425	0.00022	<0.00020	0.00032	<0.00020
Iron (Fe)-Dissolved (mg/L)	2.64	0.020	0.362	<0.010	0.014
Lead (Pb)-Dissolved (mg/L)	0.00179	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0430	0.0132	0.0714	0.0076	0.293
Magnesium (Mg)-Dissolved (mg/L)	20.1 <sup>DLM</sup>	30.5	21.2	21.0	13.2
Manganese (Mn)-Dissolved (mg/L)	0.329	0.304	0.359	0.00947	0.0682
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00488	0.00388	0.00477	0.000656	0.00379
Nickel (Ni)-Dissolved (mg/L)	0.00486	0.00257	0.00087	0.00110	<0.00050
Phosphorus (P)-Dissolved (mg/L)	0.134	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	3.04	2.83	1.92	0.90	2.64
Selenium (Se)-Dissolved (mg/L)	0.000336	0.000337	0.000094	0.000714	<0.000050
Silicon (Si)-Dissolved (mg/L)	9.30 <sup>DLM</sup>	5.40	4.45	4.18	3.44
Silver (Ag)-Dissolved (mg/L)	0.000033	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	24.2	11.8	36.6	3.11	125
Strontium (Sr)-Dissolved (mg/L)	0.817	0.447	0.577	0.131	0.379
Sulfur (S)-Dissolved (mg/L)	8.1 <sup>DLM</sup>	23.3	7.3	5.8	<1.0
Thallium (Tl)-Dissolved (mg/L)	0.000085	0.000029	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	0.00014	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.0105	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.00118	0.00377	0.00349	0.000562	0.00289
Vanadium (V)-Dissolved (mg/L)	0.00488	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0183	0.0016	<0.0010	0.0268	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2227320-6 WATER 30-JAN-19 13:10 GH-MW-MC-1S-190130	L2227320-7 WATER 30-JAN-19 12:12 GH-MW-WILLOW-1D-190130	L2227320-8 WATER 30-JAN-19 12:45 GH-MW-MC-1D-190130	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Calcium (Ca)-Dissolved (mg/L)	43.8	17.0	25.4	
	Chromium (Cr)-Dissolved (mg/L)	0.00023	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00015	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00027	<0.00020	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.138	0.093	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0020	0.208	0.0680	
	Magnesium (Mg)-Dissolved (mg/L)	11.5	12.4	13.6	
	Manganese (Mn)-Dissolved (mg/L)	0.00018	0.116	0.148	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000921	0.00504	0.00546	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00054	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	0.31	1.74	1.21	
	Selenium (Se)-Dissolved (mg/L)	0.00138	0.000052	<0.000050	
	Silicon (Si)-Dissolved (mg/L)	1.69	3.15	3.44	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	0.807	117	31.7	
	Strontium (Sr)-Dissolved (mg/L)	0.187	0.470	0.360	
	Sulfur (S)-Dissolved (mg/L)	8.2	1.5	1.2	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000024	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)	0.000729	0.000328	0.000103	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0011	0.0011	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2227320-1	GH-MW-WOLF-1D-190130	DMD	Dissolved metals sample(s) digested due to observed precipitate or particulate.

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MES	L2227320-1, -2, -3, -4, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2227320-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2227320-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2227320-1, -2, -3, -4, -5, -6, -7, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-DIS-ICP-CL</b>	Water	Dissolved Metals by ICPOES	APHA 3030B/EPA 6010D
"This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (APHA Method 3030B) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH/EC/ALK-CL</b>	Water	pH, Conductivity and Total Alkalinity	APHA 4500H,2510,2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed) pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode. Alkalinity measurement is based on the sample's capacity to neutralize acid Conductivity measurement is based on the sample's capacity to convey an electric current			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

## Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

**Chain of Custody Numbers:**

---

17-700123

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 1 of 14

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Brian Hansen

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>ALK-MAN-CL</b>		<b>Water</b>							
Batch	R4497767								
<b>WG2985882-4</b>	<b>LCS</b>								
Alkalinity, Total (as CaCO3)			99.2		%		85-115	08-FEB-19	
<b>WG2985882-3</b>	<b>MB</b>								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-FEB-19	
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>							
Batch	R4484895								
<b>WG2982190-7</b>	<b>DUP</b>	<b>L2227320-8</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L	RPD-NA	N/A	20	03-FEB-19
<b>WG2982190-2</b>	<b>LCS</b>	<b>TMRM</b>							
Beryllium (Be)-Dissolved			99.96		%		80-120	03-FEB-19	
<b>WG2982190-6</b>	<b>LCS</b>	<b>TMRM</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	03-FEB-19	
<b>WG2982190-1</b>	<b>MB</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-19	
<b>WG2982190-5</b>	<b>MB</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-19	
<b>WG2982190-8</b>	<b>MS</b>	<b>L2227320-8</b>							
Beryllium (Be)-Dissolved			105.9		%		70-130	03-FEB-19	
<b>BR-L-IC-N-CL</b>		<b>Water</b>							
Batch	R4494052								
<b>WG2984769-3</b>	<b>DUP</b>	<b>L2227320-6</b>							
Bromide (Br)			<0.050		mg/L	RPD-NA	N/A	20	06-FEB-19
<b>WG2984769-2</b>	<b>LCS</b>								
Bromide (Br)			104.7		%		85-115	06-FEB-19	
<b>WG2984769-1</b>	<b>MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	06-FEB-19	
<b>WG2984769-4</b>	<b>MS</b>	<b>L2227320-6</b>							
Bromide (Br)			102.1		%		75-125	06-FEB-19	
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>							
Batch	R4489328								
<b>WG2983533-2</b>	<b>LCS</b>								
Dissolved Organic Carbon			106.4		%		80-120	04-FEB-19	
<b>WG2983533-1</b>	<b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-FEB-19	
Batch	R4501789								
<b>WG2987260-2</b>	<b>LCS</b>								
Dissolved Organic Carbon			97.7		%		80-120	11-FEB-19	
<b>WG2987260-1</b>	<b>MB</b>								



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4501789								
WG2987260-1	MB								
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-FEB-19	
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4489328								
WG2983533-2	LCS								
Total Organic Carbon			109.7		%		80-120	04-FEB-19	
WG2983533-1	MB								
Total Organic Carbon			<0.50		mg/L		0.5	04-FEB-19	
Batch	R4501789								
WG2987260-2	LCS								
Total Organic Carbon			101.8		%		80-120	11-FEB-19	
WG2987260-1	MB								
Total Organic Carbon			<0.50		mg/L		0.5	11-FEB-19	
<b>CL-IC-N-CL</b> <b>Water</b>									
Batch	R4494052								
WG2984769-3	DUP	L2227320-6							
Chloride (Cl)			<0.50	<0.50	RPD-NA	mg/L	N/A	20	06-FEB-19
WG2984769-2	LCS								
Chloride (Cl)			102.4		%		90-110	06-FEB-19	
WG2984769-1	MB								
Chloride (Cl)			<0.50		mg/L		0.5	06-FEB-19	
WG2984769-4	MS	L2227320-6							
Chloride (Cl)			100.3		%		75-125	06-FEB-19	
<b>F-IC-N-CL</b> <b>Water</b>									
Batch	R4494052								
WG2984769-3	DUP	L2227320-6							
Fluoride (F)			0.153	0.154		mg/L	0.3	20	06-FEB-19
WG2984769-2	LCS								
Fluoride (F)			105.4		%		90-110	06-FEB-19	
WG2984769-1	MB								
Fluoride (F)			<0.020		mg/L		0.02	06-FEB-19	
WG2984769-4	MS	L2227320-6							
Fluoride (F)			102.3		%		75-125	06-FEB-19	
<b>HG-D-CVAA-CL</b> <b>Water</b>									



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4488830</b>							
<b>WG2983379-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			112.0		%		80-120	05-FEB-19
<b>WG2983379-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.00005C		mg/L		0.000005	05-FEB-19
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-7</b>	<b>DUP</b>	<b>L2227320-8</b>						
Aluminum (Al)-Dissolved		0.0020	0.0021		mg/L	2.6	20	03-FEB-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-19
Arsenic (As)-Dissolved		0.00049	0.00055		mg/L	11	20	03-FEB-19
Barium (Ba)-Dissolved		0.630	0.640		mg/L	1.6	20	03-FEB-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-FEB-19
Boron (B)-Dissolved		0.071	0.068		mg/L	4.1	20	03-FEB-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	03-FEB-19
Calcium (Ca)-Dissolved		25.4	26.8		mg/L	5.3	20	03-FEB-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	03-FEB-19
Iron (Fe)-Dissolved		0.093	0.091		mg/L	2.0	20	03-FEB-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-FEB-19
Lithium (Li)-Dissolved		0.0680	0.0663		mg/L	2.5	20	03-FEB-19
Manganese (Mn)-Dissolved		0.148	0.150		mg/L	1.4	20	03-FEB-19
Molybdenum (Mo)-Dissolved		0.00546	0.00561		mg/L	2.8	20	03-FEB-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-FEB-19
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-FEB-19
Potassium (K)-Dissolved		1.21	1.22		mg/L	0.3	20	03-FEB-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-FEB-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	03-FEB-19
Sodium (Na)-Dissolved		31.7	32.6		mg/L	2.6	20	03-FEB-19
Strontium (Sr)-Dissolved		0.360	0.365		mg/L	1.6	20	03-FEB-19
Thallium (Tl)-Dissolved		0.000024	0.000026		mg/L	5.4	20	03-FEB-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-FEB-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	03-FEB-19
Uranium (U)-Dissolved		0.000103	0.000110		mg/L	6.1	20	03-FEB-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-FEB-19



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-7</b>	<b>DUP</b>	<b>L2227320-8</b>						
Zinc (Zn)-Dissolved		0.0011	<0.0010	RPD-NA	mg/L	N/A	20	03-FEB-19
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	03-FEB-19
<b>WG2982190-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			107.0		%		80-120	03-FEB-19
Antimony (Sb)-Dissolved			108.9		%		80-120	03-FEB-19
Arsenic (As)-Dissolved			100.9		%		80-120	03-FEB-19
Barium (Ba)-Dissolved			103.7		%		80-120	03-FEB-19
Bismuth (Bi)-Dissolved			102.8		%		80-120	03-FEB-19
Boron (B)-Dissolved			99.3		%		80-120	03-FEB-19
Cadmium (Cd)-Dissolved			100.9		%		80-120	03-FEB-19
Calcium (Ca)-Dissolved			101.7		%		80-120	03-FEB-19
Chromium (Cr)-Dissolved			105.7		%		80-120	03-FEB-19
Cobalt (Co)-Dissolved			105.1		%		80-120	03-FEB-19
Copper (Cu)-Dissolved			104.5		%		80-120	03-FEB-19
Iron (Fe)-Dissolved			107.3		%		80-120	03-FEB-19
Lead (Pb)-Dissolved			103.8		%		80-120	03-FEB-19
Lithium (Li)-Dissolved			112.4		%		80-120	03-FEB-19
Manganese (Mn)-Dissolved			105.3		%		80-120	03-FEB-19
Molybdenum (Mo)-Dissolved			104.6		%		80-120	03-FEB-19
Nickel (Ni)-Dissolved			102.4		%		80-120	03-FEB-19
Phosphorus (P)-Dissolved			104.2		%		70-130	03-FEB-19
Potassium (K)-Dissolved			107.5		%		80-120	03-FEB-19
Selenium (Se)-Dissolved			96.7		%		80-120	03-FEB-19
Silver (Ag)-Dissolved			101.0		%		80-120	03-FEB-19
Sodium (Na)-Dissolved			107.9		%		80-120	03-FEB-19
Strontium (Sr)-Dissolved			108.3		%		80-120	03-FEB-19
Thallium (Tl)-Dissolved			101.1		%		80-120	03-FEB-19
Tin (Sn)-Dissolved			104.4		%		80-120	03-FEB-19
Titanium (Ti)-Dissolved			101.4		%		80-120	03-FEB-19
Uranium (U)-Dissolved			98.2		%		80-120	03-FEB-19
Vanadium (V)-Dissolved			107.6		%		80-120	03-FEB-19
Zinc (Zn)-Dissolved			101.5		%		80-120	03-FEB-19
Zirconium (Zr)-Dissolved			99.9		%		80-120	03-FEB-19
<b>WG2982190-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			106.3		%		80-120	03-FEB-19





## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-6</b>	<b>LCS</b>	<b>TMRM</b>						
Antimony (Sb)-Dissolved			106.5		%		80-120	03-FEB-19
Arsenic (As)-Dissolved			99.0		%		80-120	03-FEB-19
Barium (Ba)-Dissolved			104.3		%		80-120	03-FEB-19
Bismuth (Bi)-Dissolved			95.5		%		80-120	03-FEB-19
Boron (B)-Dissolved			96.3		%		80-120	03-FEB-19
Cadmium (Cd)-Dissolved			98.5		%		80-120	03-FEB-19
Calcium (Ca)-Dissolved			97.7		%		80-120	03-FEB-19
Chromium (Cr)-Dissolved			103.9		%		80-120	03-FEB-19
Cobalt (Co)-Dissolved			102.7		%		80-120	03-FEB-19
Copper (Cu)-Dissolved			101.3		%		80-120	03-FEB-19
Iron (Fe)-Dissolved			101.3		%		80-120	03-FEB-19
Lead (Pb)-Dissolved			97.7		%		80-120	03-FEB-19
Lithium (Li)-Dissolved			112.0		%		80-120	03-FEB-19
Manganese (Mn)-Dissolved			102.4		%		80-120	03-FEB-19
Molybdenum (Mo)-Dissolved			101.3		%		80-120	03-FEB-19
Nickel (Ni)-Dissolved			100.6		%		80-120	03-FEB-19
Phosphorus (P)-Dissolved			106.9		%		70-130	03-FEB-19
Potassium (K)-Dissolved			108.2		%		80-120	03-FEB-19
Selenium (Se)-Dissolved			93.6		%		80-120	03-FEB-19
Silver (Ag)-Dissolved			93.4		%		80-120	03-FEB-19
Sodium (Na)-Dissolved			102.9		%		80-120	03-FEB-19
Strontium (Sr)-Dissolved			104.7		%		80-120	03-FEB-19
Thallium (Tl)-Dissolved			96.0		%		80-120	03-FEB-19
Tin (Sn)-Dissolved			102.2		%		80-120	03-FEB-19
Titanium (Ti)-Dissolved			102.6		%		80-120	03-FEB-19
Uranium (U)-Dissolved			93.5		%		80-120	03-FEB-19
Vanadium (V)-Dissolved			104.5		%		80-120	03-FEB-19
Zinc (Zn)-Dissolved			100.7		%		80-120	03-FEB-19
Zirconium (Zr)-Dissolved			97.0		%		80-120	03-FEB-19
<b>WG2982190-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-1 MB</b>								
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	03-FEB-19
<b>WG2982190-5 MB</b>								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-19



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-5</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	03-FEB-19
<b>WG2982190-8</b>	<b>MS</b>	<b>L2227320-8</b>						
Aluminum (Al)-Dissolved			103.9		%		70-130	03-FEB-19
Antimony (Sb)-Dissolved			108.1		%		70-130	03-FEB-19
Arsenic (As)-Dissolved			103.4		%		70-130	03-FEB-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	03-FEB-19
Bismuth (Bi)-Dissolved			97.4		%		70-130	03-FEB-19
Boron (B)-Dissolved			92.0		%		70-130	03-FEB-19
Cadmium (Cd)-Dissolved			102.8		%		70-130	03-FEB-19
Calcium (Ca)-Dissolved			91.1		%		70-130	03-FEB-19
Chromium (Cr)-Dissolved			103.6		%		70-130	03-FEB-19
Cobalt (Co)-Dissolved			102.8		%		70-130	03-FEB-19



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484895</b>							
<b>WG2982190-8</b>	<b>MS</b>	<b>L2227320-8</b>						
Copper (Cu)-Dissolved			103.5		%		70-130	03-FEB-19
Iron (Fe)-Dissolved			101.3		%		70-130	03-FEB-19
Lead (Pb)-Dissolved			100.7		%		70-130	03-FEB-19
Lithium (Li)-Dissolved			108.0		%		70-130	03-FEB-19
Manganese (Mn)-Dissolved			104.7		%		70-130	03-FEB-19
Molybdenum (Mo)-Dissolved			94.5		%		70-130	03-FEB-19
Nickel (Ni)-Dissolved			100.9		%		70-130	03-FEB-19
Phosphorus (P)-Dissolved			100.8		%		70-130	03-FEB-19
Potassium (K)-Dissolved			106.5		%		70-130	03-FEB-19
Selenium (Se)-Dissolved			102.4		%		70-130	03-FEB-19
Silver (Ag)-Dissolved			92.1		%		70-130	03-FEB-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-FEB-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-FEB-19
Thallium (Tl)-Dissolved			96.0		%		70-130	03-FEB-19
Tin (Sn)-Dissolved			105.0		%		70-130	03-FEB-19
Titanium (Ti)-Dissolved			107.3		%		70-130	03-FEB-19
Uranium (U)-Dissolved			97.9		%		70-130	03-FEB-19
Vanadium (V)-Dissolved			103.8		%		70-130	03-FEB-19
Zinc (Zn)-Dissolved			104.9		%		70-130	03-FEB-19
Zirconium (Zr)-Dissolved			99.7		%		70-130	03-FEB-19
<b>MET-DIS-ICP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484577</b>							
<b>WG2981998-2</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			97.6		%		80-120	02-FEB-19
Silicon (Si)-Dissolved			97.3		%		80-120	02-FEB-19
Sulfur (S)-Dissolved			99.0		%		80-120	02-FEB-19
<b>WG2981998-6</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			99.3		%		80-120	02-FEB-19
Silicon (Si)-Dissolved			98.4		%		80-120	02-FEB-19
Sulfur (S)-Dissolved			99.7		%		80-120	02-FEB-19
<b>WG2981998-1</b>	<b>MB</b>							
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	02-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Sulfur (S)-Dissolved			<1.0		mg/L		1	02-FEB-19
<b>WG2981998-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-DIS-ICP-CL</b>		<b>Water</b>						
<b>Batch R4484577</b>								
<b>WG2981998-5</b>	<b>MB</b>							
	Magnesium (Mg)-Dissolved		<0.10		mg/L		0.1	02-FEB-19
	Silicon (Si)-Dissolved		<0.050		mg/L		0.05	02-FEB-19
	Sulfur (S)-Dissolved		<1.0		mg/L		1	02-FEB-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch R4497693</b>								
<b>WG2985837-11</b>	<b>DUP</b>	<b>L2227320-8</b>						
	Ammonia as N	0.0263	0.0231		mg/L	13	20	08-FEB-19
<b>WG2985837-10</b>	<b>LCS</b>							
	Ammonia as N		94.9		%		85-115	08-FEB-19
<b>WG2985837-2</b>	<b>LCS</b>							
	Ammonia as N		98.7		%		85-115	08-FEB-19
<b>WG2985837-1</b>	<b>MB</b>							
	Ammonia as N		<0.0050		mg/L		0.005	08-FEB-19
<b>WG2985837-9</b>	<b>MB</b>							
	Ammonia as N		<0.0050		mg/L		0.005	08-FEB-19
<b>WG2985837-12</b>	<b>MS</b>	<b>L2227320-8</b>						
	Ammonia as N		90.5		%		75-125	08-FEB-19
<b>Batch R4498660</b>								
<b>WG2986229-2</b>	<b>LCS</b>							
	Ammonia as N		89.7		%		85-115	09-FEB-19
<b>WG2986229-1</b>	<b>MB</b>							
	Ammonia as N		<0.0050		mg/L		0.005	09-FEB-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4494052</b>								
<b>WG2984769-3</b>	<b>DUP</b>	<b>L2227320-6</b>						
	Nitrite (as N)	0.0017	0.0022	J	mg/L	0.0005	0.002	06-FEB-19
<b>WG2984769-2</b>	<b>LCS</b>							
	Nitrite (as N)		106.6		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
	Nitrite (as N)		<0.0010		mg/L		0.001	06-FEB-19
<b>WG2984769-4</b>	<b>MS</b>	<b>L2227320-6</b>						
	Nitrite (as N)		104.1		%		75-125	06-FEB-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4494052</b>								
<b>WG2984769-3</b>	<b>DUP</b>	<b>L2227320-6</b>						
	Nitrate (as N)	0.114	0.122		mg/L	6.5	20	06-FEB-19
<b>WG2984769-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4494052</b>							
<b>WG2984769-2</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-FEB-19
<b>WG2984769-4</b>	<b>MS</b>	<b>L2227320-6</b>						
Nitrate (as N)			101.5		%		75-125	06-FEB-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4500672</b>							
<b>WG2986884-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.1		%		80-120	11-FEB-19
<b>WG2986884-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-FEB-19
<b>PH/EC/ALK-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4497767</b>							
<b>WG2985882-4</b>	<b>LCS</b>							
Conductivity (EC)			98.8		%		90-110	08-FEB-19
Alkalinity, Total (as CaCO3)			99.2		%		85-115	08-FEB-19
<b>WG2985882-3</b>	<b>MB</b>							
Conductivity (EC)			<2.0		uS/cm		2	08-FEB-19
Bicarbonate (HCO3)			<5.0		mg/L		5	08-FEB-19
Carbonate (CO3)			<5.0		mg/L		5	08-FEB-19
Hydroxide (OH)			<5.0		mg/L		5	08-FEB-19
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	08-FEB-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4482407</b>							
<b>WG2981357-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.2		%		80-120	01-FEB-19
<b>WG2981357-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-FEB-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4494052</b>							
<b>WG2984769-3</b>	<b>DUP</b>	<b>L2227320-6</b>						
Sulfate (SO4)		23.3	23.2		mg/L	0.3	20	06-FEB-19
<b>WG2984769-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.4		%		90-110	06-FEB-19
<b>WG2984769-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	06-FEB-19





## Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4481272							
WG2981018-10 MB								
Turbidity			<0.10		NTU		0.1	31-JAN-19



# Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2227320

Report Date: 08-JUL-19

Page 14 of 14

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	1	30-JAN-19 15:50	06-FEB-19 10:01	3	7	days	EHT
	2	30-JAN-19 14:45	06-FEB-19 10:01	3	7	days	EHT
	3	30-JAN-19 10:25	06-FEB-19 10:01	3	7	days	EHT
	4	30-JAN-19 10:30	06-FEB-19 10:01	3	7	days	EHT
	5	30-JAN-19 13:23	06-FEB-19 10:01	3	7	days	EHT
	6	30-JAN-19 13:10	06-FEB-19 10:01	3	7	days	EHT
	7	30-JAN-19 12:12	06-FEB-19 10:01	3	7	days	EHT
	8	30-JAN-19 12:45	06-FEB-19 10:01	3	7	days	EHT
Nitrite in Water by IC (Low Level)							
	1	30-JAN-19 15:50	06-FEB-19 10:01	3	7	days	EHT
	2	30-JAN-19 14:45	06-FEB-19 10:01	3	7	days	EHT
	3	30-JAN-19 10:25	06-FEB-19 10:01	3	7	days	EHT
	4	30-JAN-19 10:30	06-FEB-19 10:01	3	7	days	EHT
	5	30-JAN-19 13:23	06-FEB-19 10:01	3	7	days	EHT
	6	30-JAN-19 13:10	06-FEB-19 10:01	3	7	days	EHT
	7	30-JAN-19 12:12	06-FEB-19 10:01	3	7	days	EHT
	8	30-JAN-19 12:45	06-FEB-19 10:01	3	7	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2227320 were received on 31-JAN-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2227320-COFC

COC Number: 17-700123

Page 1 of 1

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																			
Company: SNC - Lavalin		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply				EMERGENCY															
Contact: Brian Hansen		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			4 day [P4-20%] <input type="checkbox"/>		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		1 Business day [E-100%] <input type="checkbox"/>													
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply) <input type="checkbox"/>																			
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs: dd-mm-yy hh:mm																			
Street: #3 520 Laforest		Email 1 or Fax: Brian.hansen@snc-lavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																			
City/Province: NELSON B.C.		Email 2: vicki@ipnsr@snc-lavalin.com			Analysis Request																			
Postal Code: V1L 4C6		Email 3: Cam.jaeger@teck.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below																			
Invoice To: Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Invoice Distribution																						
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																						
Company: TECK COAL		Email 1 or Fax: Cam.jaeger@teck.com																						
Contact: Cam Jaeger		Email 2:																						
Project Information		Oil and Gas Required Fields (client use)																						
ALS Account # / Quote #:		AFE/Coast Center:		PO#:																				
Job #: 658004		Major/Minor Code:		Routing Code:																				
PO / AFE:		Requisitioner:																						
LSD:		Location:																						
ALS Lab Work Order # (lab use only):		ALS Contact: Caitlyn Gardner		Sampler: PAS																				
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DISMETALS	MET-D-BMDG-CL	TSS-Turbidity	ORTHOPHOSPHATE	TOC, DOC	LEAD	CADMIUM	COPPER	CHLORIDE	FLUORIDE	IRON	NITRATE	NITRITES	PH	SILICA	SODIUM	ZINC	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	GH-MW-wolf-1D-190130	30-01-19	3:50	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-wolf-2D-190130		1445	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-willow-3D-190130		1025	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-willow-3S-190130		1030	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-willow-2D-190130		1323	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	<del>GH-MW-wolf-1S-190130</del>				<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>			5
	<del>GH-MW-wolf-2S-190130</del>				<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>			5
	GH-MW-MC-1S-190130	30-01-19	1310	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-willow-1D-190130		1212	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
	GH-MW-MC-1D-190130		1245	↓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			5
Drinking Water (DW) Samples <sup>1</sup> (client use)					Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)					SAMPLE CONDITION AS RECEIVED (lab use only)														
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
										Cooling Initiated <input type="checkbox"/>														
										INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C								
SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (lab use only)					FINAL SHIPMENT RECEPTION (lab use only)														
Released by: [Signature]		Date: 19-01-30		Time: 1730		Received by: [Signature]		Date: 1/31		Time: 9:10														



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 25-APR-19  
Report Date: 12-FEB-20 17:00 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2263097  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

Comments: Samples L2263097-4, -6, -8, -10, -12 expired for Sulphate Reducing Bacteria and Iron Bacteria for two-four hours.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-1 GH_GHLRP3_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	<0.050		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-1 GH_GHLRP3_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	<0.050		0.050	mg/L		29-APR-19	R4617146
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	<0.0010		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	<0.10		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618350
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	<0.050		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	<0.050		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	<0.10		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	<0.050		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.3		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		09-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		08-MAY-19	
Anion Sum	<0.10			meq/L		08-MAY-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-1 GH_GHLRP3_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:00 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	<0.10			meq/L		08-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation redution potential by elect.</b>							
ORP	464		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	5.28		0.10	pH		01-MAY-19	R4621319
L2263097-2 GH_GHER3_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.55		0.50	mg/L		30-APR-19	R4619444
Total Kjeldahl Nitrogen	0.141		0.050	mg/L		03-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.000050		0.000050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	0.54		0.50	mg/L		30-APR-19	R4619444
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	0.00110		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Barium (Ba)-Dissolved	0.0198		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	0.035		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	0.0097		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	88.5		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	0.16		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	0.668		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-2 GH_GHER3_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	0.0163		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	41.1		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	0.0521		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	0.00289		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	0.00106		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	1.55		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	4.52		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	4.80		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Sodium (Na)-Dissolved	4.88		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	0.526		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	0.000691		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	0.0012		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	390		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	0.00119		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0193		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.036		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0099		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	93.7		0.050	mg/L		28-APR-19	R4614989
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	0.17		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	0.785		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0157		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	46.7		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.0552		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.00283		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00107		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.75		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	4.47		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.79		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	5.62		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.550		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.000674		0.000010	mg/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-2 GH_GHER3_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:00 Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.2		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	247		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	247		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0550		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.12		0.50	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	691		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.858		0.020	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Ion Balance	86.8		-100	%		09-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-7.1			%		08-MAY-19	
Anion Sum	9.32			meq/L		08-MAY-19	
Cation Sum	8.09			meq/L		08-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.691		0.0050	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0153		0.0010	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation redution potential by elect.</b>							
ORP	416		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0021		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	198		0.30	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	515	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.5		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b>							
Turbidity	12.3		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	7.86		0.10	pH		01-MAY-19	R4621319
L2263097-3 GH_GHER3_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-4 GH_POTW06_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.05		0.50	mg/L		30-APR-19	R4619444
Iron Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Total Kjeldahl Nitrogen	0.213		0.050	mg/L		02-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	1.09		0.50	mg/L		01-MAY-19	R4619444
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4629272
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4629272
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Barium (Ba)-Dissolved	0.0568		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4629272
Boron (B)-Dissolved	0.014		0.010	mg/L	08-MAY-19	08-MAY-19	R4629272
Cadmium (Cd)-Dissolved	0.0444		0.0050	ug/L	08-MAY-19	08-MAY-19	R4629272
Calcium (Ca)-Dissolved	179		0.050	mg/L	08-MAY-19	08-MAY-19	R4629272
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-MAY-19	08-MAY-19	R4629272
Copper (Cu)-Dissolved	0.00090		0.00050	mg/L	08-MAY-19	08-MAY-19	R4629272
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4629272
Lead (Pb)-Dissolved	0.000210		0.000050	mg/L	08-MAY-19	08-MAY-19	R4629272
Lithium (Li)-Dissolved	0.0114		0.0010	mg/L	08-MAY-19	08-MAY-19	R4629272
Magnesium (Mg)-Dissolved	95.0		0.10	mg/L	08-MAY-19	08-MAY-19	R4629272
Manganese (Mn)-Dissolved	0.00130		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Molybdenum (Mo)-Dissolved	0.000826		0.000050	mg/L	08-MAY-19	08-MAY-19	R4629272
Nickel (Ni)-Dissolved	0.00065		0.00050	mg/L	08-MAY-19	08-MAY-19	R4629272
Potassium (K)-Dissolved	1.54		0.050	mg/L	08-MAY-19	08-MAY-19	R4629272
Selenium (Se)-Dissolved	33.7		0.050	ug/L	08-MAY-19	08-MAY-19	R4629272
Silicon (Si)-Dissolved	4.17		0.050	mg/L	08-MAY-19	08-MAY-19	R4629272
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4629272
Sodium (Na)-Dissolved	7.27		0.050	mg/L	08-MAY-19	08-MAY-19	R4629272
Strontium (Sr)-Dissolved	0.335		0.00020	mg/L	08-MAY-19	08-MAY-19	R4629272
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4629272
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4629272
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4629272
Uranium (U)-Dissolved	0.00372		0.000010	mg/L	08-MAY-19	08-MAY-19	R4629272
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4629272
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	08-MAY-19	08-MAY-19	R4629272
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	870	HTC	0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-4 GH_POTW06_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0585		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.013		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0582		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	177		0.050	mg/L		28-APR-19	R4614989
Chromium (Cr)-Total	0.00031		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	<0.10		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	0.00128		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	0.000256		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0104		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	104		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.00148		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.000823		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00081		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.67		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	34.1		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.11		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	7.65		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.349		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.00352		0.000010	mg/L		28-APR-19	R4614989
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.0		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	310		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	310		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	20.7	DLHC	2.5	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1310		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.18	DLHC	0.10	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Ion Balance	96.2		-100	%		09-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.9			%		08-MAY-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-4 GH_POTW06_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:50 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	18.5			meq/L		08-MAY-19	
Cation Sum	17.8			meq/L		08-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.70	DLHC	0.025	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation redution potential by elect.</b>							
ORP	432		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0029		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	555	DLHC	1.5	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1080	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b>							
Turbidity	0.36		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	7.89		0.10	pH		01-MAY-19	R4621319
L2263097-5 GH_POTW06_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
L2263097-6 GH_POTW09_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:05 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
Iron Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	0.00041		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-6 GH_POTW09_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:05							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Barium (Ba)-Dissolved	0.0347		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	0.019		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	0.0070		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	93.4		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	0.00102		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	0.144		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	0.0111		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	39.1		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	0.190		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	0.00263		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	0.00112		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	1.43		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	1.06		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	4.81		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Sodium (Na)-Dissolved	6.53		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	0.350		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	0.00203		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	0.0056		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	394		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	0.00049		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0343		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.019		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0103		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	99.1		0.050	mg/L		28-APR-19	R4614989
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	0.20		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	0.00124		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	0.168		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0108		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	46.5		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.209		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.00259		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00134		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.65		0.050	mg/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-6 GH_POTW09_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 12:05							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Selenium (Se)-Total	0.973		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.69		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	7.68		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.379		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	0.000018		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.00208		0.000010	mg/L		28-APR-19	R4614989
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	0.0067		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.3		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	255		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	255		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0273		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.67		0.50	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	736		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.941		0.020	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.2			%		08-MAY-19	
Anion Sum	8.94			meq/L		08-MAY-19	
Cation Sum	8.21			meq/L		08-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	91.9		-100	%		09-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0112		0.0050	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation reduction potential by elect.</b>							
ORP	394		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0025		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	173		0.30	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	513	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-6 GH_POTW09_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 12:05 Matrix: WG							
<b>Turbidity</b> Turbidity	1.11		0.10	NTU		26-APR-19	R4615246
<b>pH</b> pH	7.93		0.10	pH		01-MAY-19	R4621319
L2263097-7 GH_POTW09_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 12:05 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
L2263097-8 GH_POTW10_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 10:40 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
Iron Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Total Kjeldahl Nitrogen	0.065	TKNI	0.050	mg/L		02-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	<0.50		0.50	mg/L		30-APR-19	R4619444
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	0.00111		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Barium (Ba)-Dissolved	0.0195		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	0.034		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	0.0108		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	86.1		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	0.17		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	0.691		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	0.0153		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	40.1		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	0.0509		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	0.00287		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	0.00107		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	1.56		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	4.72		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	4.82		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-8 GH_POTW10_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 10:40							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	4.82		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	0.527		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	0.000677		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	380		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	0.00120		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0201		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.034		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0099		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	92.8		0.050	mg/L		28-APR-19	R4614989
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	0.18		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	0.773		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0145		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	45.2		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.0529		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.00279		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00106		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.70		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	4.56		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.62		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	5.41		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.547		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.000684		0.000010	mg/L		28-APR-19	R4614989
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.9		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	238		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	238		1.0	mg/L		01-MAY-19	R4621319

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-8 GH_POTW10_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 10:40 Matrix: WG							
<b>Ammonia, Total (as N)</b> Ammonia as N	0.0547		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b> Bromide (Br)	<0.050		0.050	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b> Chloride (Cl)	6.05		0.50	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b> Conductivity (@ 25C)	706		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b> Fluoride (F)	0.927		0.020	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b> Ion Balance	86.3		-100	%		09-MAY-19	
<b>Ion Balance Calculation</b> Cation - Anion Balance	-7.3			%		08-MAY-19	
Anion Sum	9.13			meq/L		08-MAY-19	
Cation Sum	7.89			meq/L		08-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.688		0.0050	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	0.0156		0.0010	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation redution potential by elect.</b> ORP	353		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0049		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b> Sulfate (SO4)	197		0.30	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b> Total Dissolved Solids	504	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b> Total Suspended Solids	1.7		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b> Turbidity	11.9		0.10	NTU		26-APR-19	R4615246
<b>pH</b> pH	7.94		0.10	pH		01-MAY-19	R4621319
L2263097-9 GH_POTW10_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 10:40 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
L2263097-10 GH_POTW15_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 11:10 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.94		0.50	mg/L		30-APR-19	R4619444
Iron Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	0.96		0.50	mg/L		30-APR-19	R4619444

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-10 GH_POTW15_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 11:10							
Matrix: WG							
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	0.00161		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Barium (Ba)-Dissolved	0.0224		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	0.019		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	0.0109		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	123		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	0.20		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	0.821		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	0.0142		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	43.9		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	0.186		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	0.00245		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	0.00082		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	1.45		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	0.068		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	4.36		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Sodium (Na)-Dissolved	10.7		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	0.385		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	0.00134		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	489		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	0.00158		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0219		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.019		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0364		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	126		0.050	mg/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-10 GH_POTW15_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 11:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	0.22		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	0.892		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0129		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	48.8		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.197		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.00232		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00096		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.58		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	<0.050		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.05		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	12.0		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.398		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	0.000016		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.00130		0.000010	mg/L		28-APR-19	R4614989
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.2		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	250		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	250		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0346		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	33.6	DLHC	2.5	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	879		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.22	DLHC	0.10	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-6.7			%		08-MAY-19	
Anion Sum	11.8			meq/L		08-MAY-19	
Cation Sum	10.3			meq/L		08-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	87.4		-100	%		09-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-10 GH_POTW15_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 11:10 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	406		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b> Sulfate (SO4)	281	DLHC	1.5	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b> Total Dissolved Solids	630	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b> Total Suspended Solids	4.1		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b> Turbidity	12.1		0.10	NTU		26-APR-19	R4615246
<b>pH</b> pH	7.94		0.10	pH		01-MAY-19	R4621319
L2263097-11 GH_POTW15_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 11:10 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
L2263097-12 GH_POTW17_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 13:20 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.86		0.50	mg/L		30-APR-19	R4619444
Iron Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		25-APR-19	R4625135
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-MAY-19	R4621726
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		30-APR-19	R4618027
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589
Total Organic Carbon	0.77		0.50	mg/L		30-APR-19	R4619444
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-MAY-19	08-MAY-19	R4628089
Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-MAY-19	08-MAY-19	R4628227
Dissolved Mercury Filtration Location	FIELD					08-MAY-19	R4628556
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-MAY-19	R4628553
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-MAY-19	08-MAY-19	R4628089
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Barium (Ba)-Dissolved	0.0302		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Boron (B)-Dissolved	0.022		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cadmium (Cd)-Dissolved	0.0420		0.0050	ug/L	08-MAY-19	08-MAY-19	R4628089
Calcium (Ca)-Dissolved	171		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Cobalt (Co)-Dissolved	0.14		0.10	ug/L	08-MAY-19	08-MAY-19	R4628089
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Iron (Fe)-Dissolved	0.179		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-12 GH_POTW17_WG_2019-04-01_NP							
Sampled By: CLIENT on 24-APR-19 @ 13:20							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lead (Pb)-Dissolved	0.000194		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Lithium (Li)-Dissolved	0.0133		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
Magnesium (Mg)-Dissolved	72.4		0.10	mg/L	08-MAY-19	08-MAY-19	R4628089
Manganese (Mn)-Dissolved	0.0731		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Molybdenum (Mo)-Dissolved	0.00114		0.000050	mg/L	08-MAY-19	08-MAY-19	R4628089
Nickel (Ni)-Dissolved	0.00644		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Potassium (K)-Dissolved	1.58		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Selenium (Se)-Dissolved	5.39		0.050	ug/L	08-MAY-19	08-MAY-19	R4628089
Silicon (Si)-Dissolved	4.80		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Sodium (Na)-Dissolved	7.99		0.050	mg/L	08-MAY-19	08-MAY-19	R4628089
Strontium (Sr)-Dissolved	0.484		0.00020	mg/L	08-MAY-19	08-MAY-19	R4628089
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-MAY-19	08-MAY-19	R4628089
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-MAY-19	08-MAY-19	R4628089
Uranium (U)-Dissolved	0.00216		0.000010	mg/L	08-MAY-19	08-MAY-19	R4628089
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-MAY-19	08-MAY-19	R4628089
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	08-MAY-19	08-MAY-19	R4628089
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	724		0.50	mg/L		08-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-APR-19	R4614989
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0268		0.0030	mg/L		28-APR-19	R4614989
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Arsenic (As)-Total	0.00025		0.00010	mg/L		28-APR-19	R4614989
Barium (Ba)-Total	0.0312		0.00010	mg/L		28-APR-19	R4614989
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-APR-19	R4614989
Boron (B)-Total	0.022		0.010	mg/L		28-APR-19	R4614989
Cadmium (Cd)-Total	0.0455		0.0050	ug/L		28-APR-19	R4614989
Calcium (Ca)-Total	178		0.050	mg/L		28-APR-19	R4614989
Chromium (Cr)-Total	0.00035		0.00010	mg/L		28-APR-19	R4614989
Cobalt (Co)-Total	0.17		0.10	ug/L		28-APR-19	R4614989
Copper (Cu)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Iron (Fe)-Total	0.272		0.010	mg/L		28-APR-19	R4614989
Lead (Pb)-Total	0.000217		0.000050	mg/L		28-APR-19	R4614989
Lithium (Li)-Total	0.0123		0.0010	mg/L		28-APR-19	R4614989
Magnesium (Mg)-Total	83.1		0.10	mg/L		28-APR-19	R4614989
Manganese (Mn)-Total	0.0828		0.00010	mg/L		28-APR-19	R4614989
Molybdenum (Mo)-Total	0.00111		0.000050	mg/L		28-APR-19	R4614989
Nickel (Ni)-Total	0.00717		0.00050	mg/L		28-APR-19	R4614989
Potassium (K)-Total	1.78		0.050	mg/L		28-APR-19	R4614989
Selenium (Se)-Total	4.81		0.050	ug/L		28-APR-19	R4614989
Silicon (Si)-Total	4.48		0.10	mg/L		28-APR-19	R4614989
Silver (Ag)-Total	<0.000010		0.000010	mg/L		28-APR-19	R4614989
Sodium (Na)-Total	9.25		0.050	mg/L		28-APR-19	R4614989
Strontium (Sr)-Total	0.519		0.00020	mg/L		28-APR-19	R4614989
Thallium (Tl)-Total	0.000013		0.000010	mg/L		28-APR-19	R4614989
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-APR-19	R4614989
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-APR-19	R4614989
Uranium (U)-Total	0.00222		0.000010	mg/L		28-APR-19	R4614989

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263097-12 GH_POTW17_WG_2019-04-01_NP Sampled By: CLIENT on 24-APR-19 @ 13:20 Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-APR-19	R4614989
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		28-APR-19	R4614989
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.3		1.0	mg/L		01-MAY-19	R4621368
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	323		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-MAY-19	R4621319
Alkalinity, Total (as CaCO3)	323		1.0	mg/L		01-MAY-19	R4621319
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0168		0.0050	mg/L		01-MAY-19	R4621320
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-APR-19	R4614198
<b>Chloride in Water by IC</b>							
Chloride (Cl)	20.3	DLHC	2.5	mg/L		25-APR-19	R4614198
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1190		2.0	uS/cm		01-MAY-19	R4621319
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.19	DLHC	0.10	mg/L		25-APR-19	R4614198
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-7.3			%		08-MAY-19	
Anion Sum	17.2			meq/L		08-MAY-19	
Cation Sum	14.9			meq/L		08-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	86.3		-100	%		09-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.244	DLHC	0.025	mg/L		25-APR-19	R4614198
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-APR-19	R4614198
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-APR-19	R4614357
<b>Oxidation redution potential by elect.</b>							
ORP	462		-1000	mV		30-APR-19	R4618772
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0041		0.0020	mg/L		01-MAY-19	R4619693
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	489	DLHC	1.5	mg/L		25-APR-19	R4614198
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	942	DLHC	20	mg/L		30-APR-19	R4619437
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.1		1.0	mg/L		30-APR-19	R4619436
<b>Turbidity</b>							
Turbidity	3.49		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	7.77		0.10	pH		01-MAY-19	R4621319
L2263097-13 GH_POTW17_WG_2019-04-01_FB-HG Sampled By: CLIENT on 24-APR-19 @ 13:20 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-MAY-19	R4622589

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
		Iron Related Bacteria- IRB BART Method (Semi-Quantitative):	
		A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
		Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):	
		A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW\_2019-04-01

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4621368</b>							
<b>WG3039891-6</b>	<b>DUP</b>	<b>L2263097-8</b>						
Acidity (as CaCO3)		1.9	1.7		mg/L	11	20	01-MAY-19
<b>WG3039891-5</b>	<b>LCS</b>		106.4		%		85-115	01-MAY-19
Acidity (as CaCO3)								
<b>WG3039891-4</b>	<b>MB</b>		<1.0		mg/L		2	01-MAY-19
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4621319</b>							
<b>WG3039864-9</b>	<b>DUP</b>	<b>L2263097-12</b>						
Alkalinity, Total (as CaCO3)		323	319		mg/L	1.0	20	01-MAY-19
<b>WG3039864-5</b>	<b>LCS</b>		101.7		%		85-115	01-MAY-19
Alkalinity, Total (as CaCO3)								
<b>WG3039864-8</b>	<b>LCS</b>		102.1		%		85-115	01-MAY-19
Alkalinity, Total (as CaCO3)								
<b>WG3039864-4</b>	<b>MB</b>		<1.0		mg/L		1	01-MAY-19
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628089</b>							
<b>WG3044639-3</b>	<b>DUP</b>	<b>L2263097-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-MAY-19
<b>WG3044639-2</b>	<b>LCS</b>		98.2		%		80-120	08-MAY-19
Beryllium (Be)-Dissolved								
<b>WG3044639-1</b>	<b>MB</b>	<b>NP</b>	<0.000020		mg/L		0.00002	08-MAY-19
Beryllium (Be)-Dissolved								
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614989</b>							
<b>WG3036611-2</b>	<b>LCS</b>		88.5		%		80-120	28-APR-19
Beryllium (Be)-Total								
<b>WG3036611-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	28-APR-19
Beryllium (Be)-Total								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614198</b>							
<b>WG3035865-14</b>	<b>LCS</b>		103.2		%		85-115	25-APR-19
Bromide (Br)								
<b>WG3035865-13</b>	<b>MB</b>		<0.050		mg/L		0.05	25-APR-19
Bromide (Br)								
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4619444							
<b>WG3039076-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.9		%		80-120	30-APR-19
<b>WG3039076-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-APR-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4619444							
<b>WG3039076-2</b>	<b>LCS</b>							
Total Organic Carbon			104.6		%		80-120	30-APR-19
<b>WG3039076-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-APR-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4614198							
<b>WG3035865-14</b>	<b>LCS</b>							
Chloride (Cl)			101.9		%		90-110	25-APR-19
<b>WG3035865-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-APR-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4621319							
<b>WG3039864-9</b>	<b>DUP</b>	<b>L2263097-12</b>						
Conductivity (@ 25C)		1190	1200		uS/cm	1.0	10	01-MAY-19
<b>WG3039864-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.8		%		90-110	01-MAY-19
<b>WG3039864-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.8		%		90-110	01-MAY-19
<b>WG3039864-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-MAY-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4614198							
<b>WG3035865-14</b>	<b>LCS</b>							
Fluoride (F)			109.2		%		90-110	25-APR-19
<b>WG3035865-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	25-APR-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4628227							
<b>WG3044629-3</b>	<b>DUP</b>	<b>L2263097-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	08-MAY-19
<b>WG3044629-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
Batch R4628227								
<b>WG3044629-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.0		%		80-120	08-MAY-19
<b>WG3044629-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-MAY-19
<b>WG3044629-4</b>	<b>MS</b>	<b>L2263097-2</b>						
Mercury (Hg)-Dissolved			97.2		%		70-130	08-MAY-19
<b>HG-T-CVAA-VA</b>								
Batch R4618027								
<b>WG3037671-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.1		%		80-120	30-APR-19
<b>WG3037671-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	30-APR-19
<b>HG-T-U-CVAF-VA</b>								
Batch R4622589								
<b>WG3041346-5</b>	<b>DUP</b>	<b>L2263097-6</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	03-MAY-19
<b>WG3041346-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.9		%		80-120	03-MAY-19
<b>WG3041346-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	03-MAY-19
<b>IB-BART-SQ-CL</b>								
Batch R4625135								
<b>WG3042731-1</b>	<b>MB</b>							
Iron Bacteria			<1.0		CFU/mL		1	25-APR-19
<b>MET-D-CCMS-VA</b>								
Batch R4628089								
<b>WG3044639-3</b>	<b>DUP</b>	<b>L2263097-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	08-MAY-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-MAY-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	08-MAY-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628089</b>							
<b>WG3044639-3</b>	<b>DUP</b>	<b>L2263097-1</b>						
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-MAY-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-MAY-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-MAY-19
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	08-MAY-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-MAY-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-MAY-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-MAY-19
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-MAY-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	08-MAY-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-MAY-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-MAY-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-MAY-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-MAY-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-MAY-19
<b>WG3044639-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.6		%		80-120	08-MAY-19
Antimony (Sb)-Dissolved			100.2		%		80-120	08-MAY-19
Arsenic (As)-Dissolved			96.2		%		80-120	08-MAY-19
Barium (Ba)-Dissolved			104.9		%		80-120	08-MAY-19
Bismuth (Bi)-Dissolved			98.2		%		80-120	08-MAY-19
Boron (B)-Dissolved			94.7		%		80-120	08-MAY-19
Cadmium (Cd)-Dissolved			97.8		%		80-120	08-MAY-19
Calcium (Ca)-Dissolved			97.1		%		80-120	08-MAY-19
Chromium (Cr)-Dissolved			99.2		%		80-120	08-MAY-19
Cobalt (Co)-Dissolved			96.2		%		80-120	08-MAY-19
Copper (Cu)-Dissolved			97.5		%		80-120	08-MAY-19
Iron (Fe)-Dissolved			90.0		%		80-120	08-MAY-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628089</b>							
<b>WG3044639-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			97.5		%		80-120	08-MAY-19
Lithium (Li)-Dissolved			95.5		%		80-120	08-MAY-19
Magnesium (Mg)-Dissolved			95.1		%		80-120	08-MAY-19
Manganese (Mn)-Dissolved			97.9		%		80-120	08-MAY-19
Molybdenum (Mo)-Dissolved			103.0		%		80-120	08-MAY-19
Nickel (Ni)-Dissolved			97.3		%		80-120	08-MAY-19
Potassium (K)-Dissolved			94.8		%		80-120	08-MAY-19
Selenium (Se)-Dissolved			98.0		%		80-120	08-MAY-19
Silicon (Si)-Dissolved			99.5		%		60-140	08-MAY-19
Silver (Ag)-Dissolved			102.7		%		80-120	08-MAY-19
Sodium (Na)-Dissolved			98.9		%		80-120	08-MAY-19
Strontium (Sr)-Dissolved			100.2		%		80-120	08-MAY-19
Thallium (Tl)-Dissolved			97.9		%		80-120	08-MAY-19
Tin (Sn)-Dissolved			98.7		%		80-120	08-MAY-19
Titanium (Ti)-Dissolved			101.3		%		80-120	08-MAY-19
Uranium (U)-Dissolved			96.0		%		80-120	08-MAY-19
Vanadium (V)-Dissolved			99.2		%		80-120	08-MAY-19
Zinc (Zn)-Dissolved			97.6		%		80-120	08-MAY-19
<b>WG3044639-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAY-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628089</b>							
<b>WG3044639-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614989</b>							
<b>WG3036611-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.6		%		80-120	28-APR-19
Antimony (Sb)-Total			97.4		%		80-120	28-APR-19
Arsenic (As)-Total			97.5		%		80-120	28-APR-19
Barium (Ba)-Total			100.9		%		80-120	28-APR-19
Bismuth (Bi)-Total			96.4		%		80-120	28-APR-19
Boron (B)-Total			87.8		%		80-120	28-APR-19
Cadmium (Cd)-Total			103.2		%		80-120	28-APR-19
Calcium (Ca)-Total			91.3		%		80-120	28-APR-19
Chromium (Cr)-Total			101.9		%		80-120	28-APR-19
Cobalt (Co)-Total			102.2		%		80-120	28-APR-19
Copper (Cu)-Total			100.4		%		80-120	28-APR-19
Iron (Fe)-Total			93.9		%		80-120	28-APR-19
Lead (Pb)-Total			96.2		%		80-120	28-APR-19
Lithium (Li)-Total			86.5		%		80-120	28-APR-19
Magnesium (Mg)-Total			101.9		%		80-120	28-APR-19
Manganese (Mn)-Total			103.7		%		80-120	28-APR-19





## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614989</b>							
<b>WG3036611-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Total			95.2		%		80-120	28-APR-19
Nickel (Ni)-Total			105.6		%		80-120	28-APR-19
Potassium (K)-Total			101.8		%		80-120	28-APR-19
Selenium (Se)-Total			94.8		%		80-120	28-APR-19
Silicon (Si)-Total			91.3		%		80-120	28-APR-19
Silver (Ag)-Total			95.0		%		80-120	28-APR-19
Sodium (Na)-Total			110.5		%		80-120	28-APR-19
Strontium (Sr)-Total			100.8		%		80-120	28-APR-19
Thallium (Tl)-Total			92.2		%		80-120	28-APR-19
Tin (Sn)-Total			95.1		%		80-120	28-APR-19
Titanium (Ti)-Total			96.9		%		80-120	28-APR-19
Uranium (U)-Total			94.7		%		80-120	28-APR-19
Vanadium (V)-Total			102.7		%		80-120	28-APR-19
Zinc (Zn)-Total			104.8		%		80-120	28-APR-19
<b>WG3036611-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	28-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-APR-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4614989</b>							
<b>WG3036611-1</b>	<b>MB</b>							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-APR-19
<b>Batch</b>	<b>R4617146</b>							
<b>WG3037254-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.2		%		80-120	29-APR-19
Antimony (Sb)-Total			98.8		%		80-120	29-APR-19
Arsenic (As)-Total			97.9		%		80-120	29-APR-19
Barium (Ba)-Total			102.1		%		80-120	29-APR-19
Bismuth (Bi)-Total			100.9		%		80-120	29-APR-19
Boron (B)-Total			97.8		%		80-120	29-APR-19
Cadmium (Cd)-Total			101.1		%		80-120	29-APR-19
Calcium (Ca)-Total			99.0		%		80-120	29-APR-19
Chromium (Cr)-Total			101.6		%		80-120	29-APR-19
Cobalt (Co)-Total			95.3		%		80-120	29-APR-19
Copper (Cu)-Total			97.5		%		80-120	29-APR-19
Iron (Fe)-Total			98.2		%		80-120	29-APR-19
Lead (Pb)-Total			100.8		%		80-120	29-APR-19
Lithium (Li)-Total			98.6		%		80-120	29-APR-19
Magnesium (Mg)-Total			97.7		%		80-120	29-APR-19
Manganese (Mn)-Total			100.8		%		80-120	29-APR-19
Molybdenum (Mo)-Total			93.5		%		80-120	29-APR-19
Nickel (Ni)-Total			97.6		%		80-120	29-APR-19
Potassium (K)-Total			98.0		%		80-120	29-APR-19
Selenium (Se)-Total			98.3		%		80-120	29-APR-19
Silicon (Si)-Total			104.6		%		80-120	29-APR-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4617146</b>							
<b>WG3037254-2 LCS</b>								
Silver (Ag)-Total			96.5		%		80-120	29-APR-19
Sodium (Na)-Total			103.1		%		80-120	29-APR-19
Strontium (Sr)-Total			98.2		%		80-120	29-APR-19
Thallium (Tl)-Total			101.0		%		80-120	29-APR-19
Tin (Sn)-Total			95.3		%		80-120	29-APR-19
Titanium (Ti)-Total			92.4		%		80-120	29-APR-19
Uranium (U)-Total			102.8		%		80-120	29-APR-19
Vanadium (V)-Total			99.9		%		80-120	29-APR-19
Zinc (Zn)-Total			97.3		%		80-120	29-APR-19
<b>WG3037254-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-APR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	29-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	29-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	29-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	29-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	29-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	29-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-APR-19



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4617146</b>							
<b>WG3037254-1</b>	<b>MB</b>							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-APR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4621320</b>							
<b>WG3039887-2</b>	<b>LCS</b>							
Ammonia as N			96.1		%		85-115	01-MAY-19
<b>WG3039887-6</b>	<b>LCS</b>							
Ammonia as N			101.8		%		85-115	01-MAY-19
<b>WG3039887-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-MAY-19
<b>WG3039887-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-MAY-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614198</b>							
<b>WG3035865-14</b>	<b>LCS</b>							
Nitrite (as N)			105.4		%		90-110	25-APR-19
<b>WG3035865-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-APR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614198</b>							
<b>WG3035865-14</b>	<b>LCS</b>							
Nitrate (as N)			102.0		%		90-110	25-APR-19
<b>WG3035865-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-APR-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618772</b>							
<b>WG3038341-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	30-APR-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SRB-BART-SQ-CL</b>								
<b>Water</b>								
Batch	R4625135							
<b>WG3042731-1 MB</b>								
Sulfur Reducing Bacteria			<1.0		CFU/mL		1	25-APR-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4621726							
<b>WG3040309-10 LCS</b>								
Total Kjeldahl Nitrogen			101.8		%		75-125	02-MAY-19
<b>WG3040309-14 LCS</b>								
Total Kjeldahl Nitrogen			101.0		%		75-125	02-MAY-19
<b>WG3040309-18 LCS</b>								
Total Kjeldahl Nitrogen			99.7		%		75-125	02-MAY-19
<b>WG3040309-2 LCS</b>								
Total Kjeldahl Nitrogen			104.4		%		75-125	02-MAY-19
<b>WG3040309-6 LCS</b>								
Total Kjeldahl Nitrogen			102.2		%		75-125	02-MAY-19
<b>WG3040309-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAY-19
<b>WG3040309-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAY-19
<b>WG3040309-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-MAY-19
<b>WG3040309-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAY-19
<b>WG3040309-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-MAY-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4619436							
<b>WG3037791-6 LCS</b>								
Total Suspended Solids			94.8		%		85-115	30-APR-19
<b>WG3037791-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	30-APR-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4615246							
<b>WG3036085-6 DUP</b>		<b>L2263097-10</b>						
Turbidity		12.1	12.3		NTU	1.6	15	26-APR-19
<b>WG3036085-5 LCS</b>								
Turbidity			97.0		%		85-115	26-APR-19
<b>WG3036085-4 MB</b>								



## Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4615246							
WG3036085-4	MB							
Turbidity			<0.10		NTU		0.1	26-APR-19

# Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2263097

Report Date: 12-FEB-20

Page 15 of 15

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	24-APR-19 12:00	30-APR-19 13:20	0.25	145	hours	EHTR-FM
	2	24-APR-19 12:00	30-APR-19 13:20	0.25	145	hours	EHTR-FM
	4	24-APR-19 12:50	30-APR-19 13:20	0.25	144	hours	EHTR-FM
	6	24-APR-19 12:05	30-APR-19 13:20	0.25	145	hours	EHTR-FM
	8	24-APR-19 10:40	30-APR-19 13:20	0.25	147	hours	EHTR-FM
	10	24-APR-19 11:10	30-APR-19 13:20	0.25	146	hours	EHTR-FM
	12	24-APR-19 13:20	30-APR-19 13:20	0.25	144	hours	EHTR-FM
pH							
	1	24-APR-19 12:00	01-MAY-19 10:00	0.25	166	hours	EHTR-FM
	2	24-APR-19 12:00	01-MAY-19 10:00	0.25	166	hours	EHTR-FM
	4	24-APR-19 12:50	01-MAY-19 10:00	0.25	165	hours	EHTR-FM
	6	24-APR-19 12:05	01-MAY-19 10:00	0.25	166	hours	EHTR-FM
	8	24-APR-19 10:40	01-MAY-19 10:00	0.25	167	hours	EHTR-FM
	10	24-APR-19 11:10	01-MAY-19 10:00	0.25	167	hours	EHTR-FM
	12	24-APR-19 13:20	01-MAY-19 10:00	0.25	165	hours	EHTR-FM
<b>Bacteriological Tests</b>							
Iron Bacteria, Semi-quantitative							
	4	24-APR-19 12:50	25-APR-19 15:00	24	26	hours	EHTL
	6	24-APR-19 12:05	25-APR-19 15:00	24	27	hours	EHTL
	8	24-APR-19 10:40	25-APR-19 15:00	24	28	hours	EHTL
	10	24-APR-19 11:10	25-APR-19 15:00	24	28	hours	EHTL
	12	24-APR-19 13:20	25-APR-19 15:00	24	26	hours	EHTL
Sulphate Reducing Bacteria, Semi-quantit							
	4	24-APR-19 12:50	25-APR-19 15:00	24	26	hours	EHTL
	6	24-APR-19 12:05	25-APR-19 15:00	24	27	hours	EHTL
	8	24-APR-19 10:40	25-APR-19 15:00	24	28	hours	EHTL
	10	24-APR-19 11:10	25-APR-19 15:00	24	28	hours	EHTL
	12	24-APR-19 13:20	25-APR-19 15:00	24	26	hours	EHTL

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2263097 were received on 25-APR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **QTR\_GW\_2019-04-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution			
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Excel	PDF	EDD
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 2:	X	X	X
								Email 3:			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013		
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	250-865-3048			Phone Number	403 407 1794						

SAMPLE DETAILS							ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	IRON BACTERIA	SULFUR BACTERIA	Filtered: F: Field, L: Lab, PL: Field & Lab, N: None			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>pk</i>	<i>4/25 0900</i>

SERVICE REQUEST (rush - subject to availability)	Sampl'er's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X		
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampl'er's Signature	Date/Time

*7°C*

COC ID: **QTR\_GW\_2019-04-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equis-GHO-Field@teck.co	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013			
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-3048			Phone Number	403 407 1794							

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: Non



L2263097-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	IRON BACTERIA	SULFUR BACTERIA
GH_POTW15_WG_2019-04-01_NP	GH_POTW15	WG		2019/04/24	11:10	G	10	1	1	1	1	1	1	1	1	1	1
GH_POTW15_WG_2019-04-01_FB-HG	GH_POTW15	WG		2019/04/24	11:10	G	1								1		
GH_POTW17_WG_2019-04-01_NP	GH_POTW17	WG		2019/04/24	13:20	G	10	1	1	1	1	1	1	1	1	1	1
GH_POTW17_WG_2019-04-01_FB-HG	GH_POTW17	WG		2019/04/24	13:20	G	1								1		
		WG															
		WG															
		WG															
		WG															
		WG															

10  
11  
12  
13

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			DK	4/25 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>		
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

70



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 26-APR-19  
Report Date: 06-MAY-19 16:37 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2263544  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-1 GH_GHER1_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.93		0.50	mg/L		02-MAY-19	R4621937
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-MAY-19	R4622466
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
Total Organic Carbon	2.13		0.50	mg/L		02-MAY-19	R4621937
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-APR-19	30-APR-19	R4618634
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-APR-19	30-APR-19	R4618027
Dissolved Mercury Filtration Location	FIELD					30-APR-19	R4617492
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-APR-19	30-APR-19	R4618634
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Barium (Ba)-Dissolved	0.0864		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Boron (B)-Dissolved	0.035		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Cadmium (Cd)-Dissolved	0.0224		0.0050	ug/L	30-APR-19	30-APR-19	R4618634
Calcium (Ca)-Dissolved	170		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-APR-19	30-APR-19	R4618634
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Lithium (Li)-Dissolved	0.0196		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
Magnesium (Mg)-Dissolved	55.4		0.10	mg/L	30-APR-19	30-APR-19	R4618634
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Molybdenum (Mo)-Dissolved	0.000599		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Nickel (Ni)-Dissolved	0.00082		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Potassium (K)-Dissolved	1.42		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Selenium (Se)-Dissolved	3.45		0.050	ug/L	30-APR-19	30-APR-19	R4618634
Silicon (Si)-Dissolved	4.34		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Sodium (Na)-Dissolved	4.69		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Strontium (Sr)-Dissolved	0.467		0.00020	mg/L	30-APR-19	30-APR-19	R4618634
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Uranium (U)-Dissolved	0.00267		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
<b>Hardness</b>							
Hardness (as CaCO3)	651		0.50	mg/L		30-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		30-APR-19	R4618346
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-MAY-19	R4618825
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-1 GH_GHER1_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.113		0.0030	mg/L		30-APR-19	R4618346
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Arsenic (As)-Total	0.00016		0.00010	mg/L		30-APR-19	R4618346
Barium (Ba)-Total	0.0899		0.00010	mg/L		30-APR-19	R4618346
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Boron (B)-Total	0.034		0.010	mg/L		30-APR-19	R4618346
Cadmium (Cd)-Total	0.0271		0.0050	ug/L		30-APR-19	R4618346
Calcium (Ca)-Total	165		0.050	mg/L		30-APR-19	R4618346
Chromium (Cr)-Total	0.00031		0.00010	mg/L		30-APR-19	R4618346
Cobalt (Co)-Total	<0.10		0.10	ug/L		30-APR-19	R4618346
Copper (Cu)-Total	0.00050		0.00050	mg/L		30-APR-19	R4618346
Iron (Fe)-Total	0.400		0.010	mg/L		30-APR-19	R4618346
Lead (Pb)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Lithium (Li)-Total	0.0165		0.0010	mg/L		30-APR-19	R4618346
Magnesium (Mg)-Total	54.2		0.10	mg/L		30-APR-19	R4618346
Manganese (Mn)-Total	0.00306		0.00010	mg/L		30-APR-19	R4618346
Molybdenum (Mo)-Total	0.000712		0.000050	mg/L		30-APR-19	R4618346
Nickel (Ni)-Total	0.00092		0.00050	mg/L		30-APR-19	R4618346
Potassium (K)-Total	1.40		0.050	mg/L		30-APR-19	R4618346
Selenium (Se)-Total	3.46		0.050	ug/L		30-APR-19	R4618346
Silicon (Si)-Total	4.68		0.10	mg/L		30-APR-19	R4618346
Silver (Ag)-Total	0.000044		0.000010	mg/L		30-APR-19	R4618346
Sodium (Na)-Total	4.79		0.050	mg/L		30-APR-19	R4618346
Strontium (Sr)-Total	0.519		0.00020	mg/L		30-APR-19	R4618346
Thallium (Tl)-Total	0.000028		0.000010	mg/L		30-APR-19	R4618346
Tin (Sn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Titanium (Ti)-Total	<0.010		0.010	mg/L		30-APR-19	R4618346
Uranium (U)-Total	0.00306		0.000010	mg/L		30-APR-19	R4618346
Vanadium (V)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		30-APR-19	R4618346
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.5		1.0	mg/L		03-MAY-19	R4622814
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	341		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Total (as CaCO3)	341		1.0	mg/L		03-MAY-19	R4622768
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0181		0.0050	mg/L		02-MAY-19	R4622287
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		26-APR-19	R4618351
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.5	DLHC	2.5	mg/L		26-APR-19	R4618351
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1050		2.0	uS/cm		03-MAY-19	R4622768
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.55	DLHC	0.10	mg/L		26-APR-19	R4618351
<b>Ion Balance Calculation</b>							
Ion Balance	89.2		-100	%		04-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.7			%		04-MAY-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-1 GH_GHER1_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:00 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	14.9			meq/L		04-MAY-19	
Cation Sum	13.3			meq/L		04-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.089	DLHC	0.025	mg/L		26-APR-19	R4618351
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		26-APR-19	R4618351
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0032		0.0010	mg/L		27-APR-19	R4616689
<b>Oxidation redution potential by elect.</b>							
ORP	459		-1000	mV		01-MAY-19	R4619972
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0090		0.0020	mg/L		02-MAY-19	R4621768
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	380	DLHC	1.5	mg/L		26-APR-19	R4618351
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	817	DLHC	20	mg/L		01-MAY-19	R4621312
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.2		1.0	mg/L		01-MAY-19	R4620566
<b>Turbidity</b>							
Turbidity	4.73		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	7.86		0.10	pH		03-MAY-19	R4622768
L2263544-2 GH_GHER1_WG_2019-04-01_FB-HG Sampled By: CLIENT on 25-APR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
L2263544-3 GH_GHLRP1_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-MAY-19	R4621937
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-MAY-19	R4622466
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
Total Organic Carbon	<0.50		0.50	mg/L		02-MAY-19	R4621937
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-APR-19	30-APR-19	R4618634
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-APR-19	30-APR-19	R4618027
Dissolved Mercury Filtration Location	FIELD					30-APR-19	R4617492
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					01-MAY-19	R4618686
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-APR-19	30-APR-19	R4618634
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Barium (Ba)-Dissolved	0.00022	RRV	0.00010	mg/L	01-MAY-19	01-MAY-19	R4618783
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Boron (B)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-APR-19	30-APR-19	R4618634

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-3 GH_GHLRP1_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	01-MAY-19	01-MAY-19	R4618783
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-APR-19	30-APR-19	R4618634
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	30-APR-19	30-APR-19	R4618634
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Potassium (K)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	30-APR-19	30-APR-19	R4618634
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	30-APR-19	30-APR-19	R4618634
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		01-MAY-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		30-APR-19	R4618346
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-MAY-19	R4618825
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		30-APR-19	R4618346
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Arsenic (As)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Barium (Ba)-Total	0.00011		0.00010	mg/L		01-MAY-19	R4618783
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Boron (B)-Total	<0.010		0.010	mg/L		30-APR-19	R4618346
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		30-APR-19	R4618346
Calcium (Ca)-Total	<0.050		0.050	mg/L		01-MAY-19	R4618783
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Cobalt (Co)-Total	<0.10		0.10	ug/L		30-APR-19	R4618346
Copper (Cu)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Iron (Fe)-Total	<0.010		0.010	mg/L		30-APR-19	R4618346
Lead (Pb)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Lithium (Li)-Total	<0.0010		0.0010	mg/L		30-APR-19	R4618346
Magnesium (Mg)-Total	<0.10		0.10	mg/L		30-APR-19	R4618346
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Potassium (K)-Total	<0.050		0.050	mg/L		30-APR-19	R4618346
Selenium (Se)-Total	<0.050		0.050	ug/L		30-APR-19	R4618346
Silicon (Si)-Total	<0.10		0.10	mg/L		30-APR-19	R4618346

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-3 GH_GHLRP1_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Total	<0.000010		0.000010	mg/L		30-APR-19	R4618346
Sodium (Na)-Total	<0.050		0.050	mg/L		30-APR-19	R4618346
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		01-MAY-19	R4618783
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		30-APR-19	R4618346
Tin (Sn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Titanium (Ti)-Total	<0.010		0.010	mg/L		30-APR-19	R4618346
Uranium (U)-Total	<0.000010		0.000010	mg/L		30-APR-19	R4618346
Vanadium (V)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		30-APR-19	R4618346
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.5		1.0	mg/L		03-MAY-19	R4622814
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0067		0.0050	mg/L		02-MAY-19	R4622287
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-APR-19	R4618351
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		26-APR-19	R4618351
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		03-MAY-19	R4622768
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		26-APR-19	R4618351
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		04-MAY-19	
Anion Sum	<0.10			meq/L		04-MAY-19	
Cation Sum	<0.10			meq/L		04-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		04-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-APR-19	R4618351
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-APR-19	R4618351
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-APR-19	R4616689
<b>Oxidation redution potential by elect.</b>							
ORP	484		-1000	mV		01-MAY-19	R4619972
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-MAY-19	R4621768
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		26-APR-19	R4618351
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		01-MAY-19	R4621312
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-MAY-19	R4620566
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-3 GH_GHLRP1_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:00 Matrix: WG pH pH	5.30		0.10	pH		03-MAY-19	R4622768
L2263544-4 GH_MW-GHC-1D_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 11:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.04		0.50	mg/L		02-MAY-19	R4621937
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-MAY-19	R4622466
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
Total Organic Carbon	2.07		0.50	mg/L		02-MAY-19	R4621937
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-APR-19	30-APR-19	R4618634
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618027
Dissolved Mercury Filtration Location	FIELD					30-APR-19	R4617492
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-APR-19	30-APR-19	R4618634
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Barium (Ba)-Dissolved	0.0863		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Boron (B)-Dissolved	0.036		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Cadmium (Cd)-Dissolved	0.0196		0.0050	ug/L	30-APR-19	30-APR-19	R4618634
Calcium (Ca)-Dissolved	176		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-APR-19	30-APR-19	R4618634
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Lithium (Li)-Dissolved	0.0199		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
Magnesium (Mg)-Dissolved	55.5		0.10	mg/L	30-APR-19	30-APR-19	R4618634
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Molybdenum (Mo)-Dissolved	0.000636		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Nickel (Ni)-Dissolved	0.00087		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Potassium (K)-Dissolved	1.41		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Selenium (Se)-Dissolved	3.89		0.050	ug/L	30-APR-19	30-APR-19	R4618634
Silicon (Si)-Dissolved	4.53		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Sodium (Na)-Dissolved	4.79		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Strontium (Sr)-Dissolved	0.478		0.00020	mg/L	30-APR-19	30-APR-19	R4618634
Thallium (Tl)-Dissolved	0.000026		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Uranium (U)-Dissolved	0.00276		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
<b>Hardness</b>							
Hardness (as CaCO3)	668		0.50	mg/L		30-APR-19	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-4 GH_MW-GHC-1D_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 11:10							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		30-APR-19	R4618346
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-MAY-19	R4618825
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0842		0.0030	mg/L		30-APR-19	R4618346
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Arsenic (As)-Total	0.00016		0.00010	mg/L		30-APR-19	R4618346
Barium (Ba)-Total	0.0939		0.00010	mg/L		30-APR-19	R4618346
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Boron (B)-Total	0.035		0.010	mg/L		30-APR-19	R4618346
Cadmium (Cd)-Total	0.0206		0.0050	ug/L		30-APR-19	R4618346
Calcium (Ca)-Total	172		0.050	mg/L		30-APR-19	R4618346
Chromium (Cr)-Total	0.00027		0.00010	mg/L		30-APR-19	R4618346
Cobalt (Co)-Total	<0.10		0.10	ug/L		30-APR-19	R4618346
Copper (Cu)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Iron (Fe)-Total	0.366		0.010	mg/L		30-APR-19	R4618346
Lead (Pb)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Lithium (Li)-Total	0.0174		0.0010	mg/L		30-APR-19	R4618346
Magnesium (Mg)-Total	57.0		0.10	mg/L		30-APR-19	R4618346
Manganese (Mn)-Total	0.00233		0.00010	mg/L		30-APR-19	R4618346
Molybdenum (Mo)-Total	0.000698		0.000050	mg/L		30-APR-19	R4618346
Nickel (Ni)-Total	0.00089		0.00050	mg/L		30-APR-19	R4618346
Potassium (K)-Total	1.44		0.050	mg/L		30-APR-19	R4618346
Selenium (Se)-Total	3.56		0.050	ug/L		30-APR-19	R4618346
Silicon (Si)-Total	4.95		0.10	mg/L		30-APR-19	R4618346
Silver (Ag)-Total	0.000011		0.000010	mg/L		30-APR-19	R4618346
Sodium (Na)-Total	5.20		0.050	mg/L		30-APR-19	R4618346
Strontium (Sr)-Total	0.513		0.00020	mg/L		30-APR-19	R4618346
Thallium (Tl)-Total	0.000026		0.000010	mg/L		30-APR-19	R4618346
Tin (Sn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Titanium (Ti)-Total	<0.010		0.010	mg/L		30-APR-19	R4618346
Uranium (U)-Total	0.00294		0.000010	mg/L		30-APR-19	R4618346
Vanadium (V)-Total	<0.00050		0.00050	mg/L		30-APR-19	R4618346
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		30-APR-19	R4618346
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.5		1.0	mg/L		03-MAY-19	R4622814
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	345		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Total (as CaCO3)	345		1.0	mg/L		03-MAY-19	R4622768
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0055		0.0050	mg/L		02-MAY-19	R4622287
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25		0.25	mg/L		26-APR-19	R4618351
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.7		2.5	mg/L		26-APR-19	R4618351
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1040		2.0	uS/cm		03-MAY-19	R4622768
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.58		0.10	mg/L		26-APR-19	R4618351

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-4 GH_MW-GHC-1D_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 11:10 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.6			%		04-MAY-19	
Anion Sum	15.2			meq/L		04-MAY-19	
Cation Sum	13.6			meq/L		04-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	89.5		-100	%		04-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.121		0.025	mg/L		26-APR-19	R4618351
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050		0.0050	mg/L		26-APR-19	R4618351
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		27-APR-19	R4616689
<b>Oxidation redution potential by elect.</b>							
ORP	483		-1000	mV		01-MAY-19	R4619972
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0063		0.0020	mg/L		02-MAY-19	R4621768
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	391		1.5	mg/L		26-APR-19	R4618351
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	790	DLHC	20	mg/L		01-MAY-19	R4621312
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.0		1.0	mg/L		01-MAY-19	R4620566
<b>Turbidity</b>							
Turbidity	4.25		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	7.97		0.10	pH		03-MAY-19	R4622768
L2263544-5 GH_MW-GHC-1D_WG_2019-04-01_FB-HG Sampled By: CLIENT on 25-APR-19 @ 11:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
L2263544-6 GH_MW-GHC-1S_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:35 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.70		0.50	mg/L		02-MAY-19	R4621937
Total Kjeldahl Nitrogen	0.124		0.050	mg/L		03-MAY-19	R4622466
Mercury (Hg)-Total	0.00222		0.00050	ug/L		04-MAY-19	R4622882
Total Organic Carbon	3.06		0.50	mg/L		02-MAY-19	R4621937
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-APR-19	30-APR-19	R4618634
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-APR-19	30-APR-19	R4618027
Dissolved Mercury Filtration Location	FIELD					30-APR-19	R4617492
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
Aluminum (Al)-Dissolved	0.0040		0.0030	mg/L	30-APR-19	30-APR-19	R4618634
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Arsenic (As)-Dissolved	0.00103		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Barium (Ba)-Dissolved	0.0255		0.00010	mg/L	30-APR-19	30-APR-19	R4618634

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-6 GH_MW-GHC-1S_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:35							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Boron (B)-Dissolved	0.036		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Cadmium (Cd)-Dissolved	0.0195		0.0050	ug/L	30-APR-19	30-APR-19	R4618634
Calcium (Ca)-Dissolved	240		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Cobalt (Co)-Dissolved	0.42		0.10	ug/L	30-APR-19	30-APR-19	R4618634
Copper (Cu)-Dissolved	0.00056		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Iron (Fe)-Dissolved	0.693		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Lithium (Li)-Dissolved	0.0210		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
Magnesium (Mg)-Dissolved	55.6		0.10	mg/L	30-APR-19	30-APR-19	R4618634
Manganese (Mn)-Dissolved	0.191		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Molybdenum (Mo)-Dissolved	0.000831		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Nickel (Ni)-Dissolved	0.00143		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Potassium (K)-Dissolved	1.76		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Selenium (Se)-Dissolved	0.351		0.050	ug/L	30-APR-19	30-APR-19	R4618634
Silicon (Si)-Dissolved	5.36		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Sodium (Na)-Dissolved	4.26		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Strontium (Sr)-Dissolved	0.593		0.00020	mg/L	30-APR-19	30-APR-19	R4618634
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Uranium (U)-Dissolved	0.00161		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
<b>Hardness</b>							
Hardness (as CaCO3)	827		0.50	mg/L		30-APR-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		30-APR-19	R4618346
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-MAY-19	R4618825
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.355		0.0030	mg/L		30-APR-19	R4618346
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Arsenic (As)-Total	0.00150		0.00010	mg/L		30-APR-19	R4618346
Barium (Ba)-Total	0.0353		0.00010	mg/L		30-APR-19	R4618346
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		30-APR-19	R4618346
Boron (B)-Total	0.034		0.010	mg/L		30-APR-19	R4618346
Cadmium (Cd)-Total	0.0357		0.0050	ug/L		30-APR-19	R4618346
Calcium (Ca)-Total	234		0.050	mg/L		30-APR-19	R4618346
Chromium (Cr)-Total	0.00097		0.00010	mg/L		30-APR-19	R4618346
Cobalt (Co)-Total	0.72		0.10	ug/L		30-APR-19	R4618346
Copper (Cu)-Total	0.00109		0.00050	mg/L		30-APR-19	R4618346
Iron (Fe)-Total	2.09		0.010	mg/L		30-APR-19	R4618346
Lead (Pb)-Total	0.000388		0.000050	mg/L		30-APR-19	R4618346
Lithium (Li)-Total	0.0192		0.0010	mg/L		30-APR-19	R4618346
Magnesium (Mg)-Total	56.1		0.10	mg/L		30-APR-19	R4618346
Manganese (Mn)-Total	0.218		0.00010	mg/L		30-APR-19	R4618346
Molybdenum (Mo)-Total	0.00101		0.000050	mg/L		30-APR-19	R4618346
Nickel (Ni)-Total	0.00237		0.00050	mg/L		30-APR-19	R4618346

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-6 GH_MW-GHC-1S_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:35							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Potassium (K)-Total	1.89		0.050	mg/L		30-APR-19	R4618346
Selenium (Se)-Total	0.396		0.050	ug/L		30-APR-19	R4618346
Silicon (Si)-Total	6.31		0.10	mg/L		30-APR-19	R4618346
Silver (Ag)-Total	0.000052		0.000010	mg/L		30-APR-19	R4618346
Sodium (Na)-Total	4.35		0.050	mg/L		30-APR-19	R4618346
Strontium (Sr)-Total	0.671		0.00020	mg/L		30-APR-19	R4618346
Thallium (Tl)-Total	0.000023		0.000010	mg/L		30-APR-19	R4618346
Tin (Sn)-Total	<0.00010		0.00010	mg/L		30-APR-19	R4618346
Titanium (Ti)-Total	0.011		0.010	mg/L		30-APR-19	R4618346
Uranium (U)-Total	0.00194		0.000010	mg/L		30-APR-19	R4618346
Vanadium (V)-Total	0.00120		0.00050	mg/L		30-APR-19	R4618346
Zinc (Zn)-Total	0.0077		0.0030	mg/L		30-APR-19	R4618346
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.2		1.0	mg/L		03-MAY-19	R4622814
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	304		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Total (as CaCO3)	304		1.0	mg/L		03-MAY-19	R4622768
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0197		0.0050	mg/L		02-MAY-19	R4622287
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25		0.25	mg/L		26-APR-19	R4618351
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.1		2.5	mg/L		26-APR-19	R4618351
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		03-MAY-19	R4622768
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.21		0.10	mg/L		26-APR-19	R4618351
<b>Ion Balance Calculation</b>							
Ion Balance	89.8		-100	%		04-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.4			%		04-MAY-19	
Anion Sum	18.7			meq/L		04-MAY-19	
Cation Sum	16.8			meq/L		04-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.061		0.025	mg/L		26-APR-19	R4618351
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050		0.0050	mg/L		26-APR-19	R4618351
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-APR-19	R4616689
<b>Oxidation redution potential by elect.</b>							
ORP	409		-1000	mV		01-MAY-19	R4619972
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0154		0.0020	mg/L		02-MAY-19	R4621768
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	593		1.5	mg/L		26-APR-19	R4618351
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1050	DLHC	20	mg/L		01-MAY-19	R4621312
<b>Total Suspended Solids</b>							
Total Suspended Solids	20.0		1.0	mg/L		01-MAY-19	R4620566

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-6 GH_MW-GHC-1S_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:35 Matrix: WG							
<b>Turbidity</b> Turbidity	26.1		0.10	NTU		26-APR-19	R4615246
<b>pH</b> pH	7.95		0.10	pH		03-MAY-19	R4622768
L2263544-7 GH_MW-GHC-1S_WG_2019-04-01_FB-HG Sampled By: CLIENT on 25-APR-19 @ 12:35 Matrix: WG							
<b>Miscellaneous Parameters</b> Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-MAY-19	R4622882
L2263544-8 GH_TRIPGW_WG_2019-04-01_NP Sampled By: CLIENT on 25-APR-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.54		0.50	mg/L		02-MAY-19	R4621937
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-MAY-19	R4622466
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-MAY-19	R4618825
Total Organic Carbon	0.59		0.50	mg/L		02-MAY-19	R4621937
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-APR-19	30-APR-19	R4618634
Dissolved Metals Filtration Location	FIELD					30-APR-19	R4617993
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-APR-19	30-APR-19	R4618027
Dissolved Mercury Filtration Location	FIELD					30-APR-19	R4617492
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					01-MAY-19	R4618686
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-APR-19	30-APR-19	R4618634
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Boron (B)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	30-APR-19	30-APR-19	R4618634
Calcium (Ca)-Dissolved	0.057	RRV	0.050	mg/L	01-MAY-19	01-MAY-19	R4618783
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-APR-19	30-APR-19	R4618634
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	30-APR-19	30-APR-19	R4618634
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	30-APR-19	30-APR-19	R4618634
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	30-APR-19	30-APR-19	R4618634
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Potassium (K)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	30-APR-19	30-APR-19	R4618634
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	30-APR-19	30-APR-19	R4618634
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	30-APR-19	30-APR-19	R4618634
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2263544-8 GH_TRIPGW_WG_2019-04-01_NP							
Sampled By: CLIENT on 25-APR-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-APR-19	30-APR-19	R4618634
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-APR-19	30-APR-19	R4618634
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	30-APR-19	30-APR-19	R4618634
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-APR-19	30-APR-19	R4618634
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	01-MAY-19	01-MAY-19	R4618783
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		01-MAY-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622814
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		03-MAY-19	R4622768
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0280	RRV	0.0050	mg/L		02-MAY-19	R4622287
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-APR-19	R4618351
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		26-APR-19	R4618351
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		03-MAY-19	R4622768
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		26-APR-19	R4618351
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		06-MAY-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		06-MAY-19	
Anion Sum	<0.10			meq/L		06-MAY-19	
Cation Sum	<0.10			meq/L		06-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-APR-19	R4618351
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-APR-19	R4618351
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-APR-19	R4616689
<b>Oxidation redution potential by elect.</b>							
ORP	461		-1000	mV		01-MAY-19	R4619972
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-MAY-19	R4621768
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		26-APR-19	R4618351
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		01-MAY-19	R4621312
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-MAY-19	R4620566
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-APR-19	R4615246
<b>pH</b>							
pH	5.26		0.10	pH		03-MAY-19	R4622768

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	DOC/HG-D/D-MET - Sample was Filtered and Preserved at the laboratory

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulfate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW\_2019-04-01

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4622814							
<b>WG3041738-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			110.4		%		85-115	03-MAY-19
<b>WG3041738-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	03-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4622768							
<b>WG3041721-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.7		%		85-115	03-MAY-19
<b>WG3041721-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4618634							
<b>WG3037783-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			105.0		%		80-120	30-APR-19
<b>WG3037783-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-APR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4618346							
<b>WG3037775-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.7		%		80-120	30-APR-19
<b>WG3037775-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	30-APR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4618351							
<b>WG3038187-2</b>	<b>LCS</b>							
Bromide (Br)			102.7		%		85-115	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-APR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4621937							
<b>WG3040798-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.9		%		80-120	02-MAY-19
<b>WG3040798-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4621937							
<b>WG3040798-2</b>	<b>LCS</b>							
Total Organic Carbon			101.8		%		80-120	02-MAY-19
<b>WG3040798-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4618351							
<b>WG3038187-2</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		90-110	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-APR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4622768							
<b>WG3041721-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.4		%		90-110	03-MAY-19
<b>WG3041721-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4618351							
<b>WG3038187-2</b>	<b>LCS</b>							
Fluoride (F)			105.7		%		90-110	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-APR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4618027							
<b>WG3037601-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.2		%		80-120	30-APR-19
<b>WG3037601-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.9		%		80-120	30-APR-19
<b>WG3037601-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-APR-19
<b>WG3037601-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-APR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4618825							
<b>WG3038724-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.3		%		80-120	01-MAY-19
<b>WG3038724-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch      R4618825								
<b>WG3038724-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	01-MAY-19
<b>HG-T-U-CVAF-VA</b> <b>Water</b>								
Batch      R4622882								
<b>WG3041762-3 DUP</b>								
Mercury (Hg)-Total		<b>L2263544-6</b> 0.00222	0.00217		ug/L	2.3	20	04-MAY-19
<b>WG3041762-2 LCS</b>								
Mercury (Hg)-Total			97.8		%		80-120	04-MAY-19
<b>WG3041762-1 MB</b>								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-MAY-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch      R4618634								
<b>WG3037783-2 LCS</b>								
Aluminum (Al)-Dissolved			105.7		%		80-120	30-APR-19
Antimony (Sb)-Dissolved			97.0		%		80-120	30-APR-19
Arsenic (As)-Dissolved			101.1		%		80-120	30-APR-19
Barium (Ba)-Dissolved			107.7		%		80-120	30-APR-19
Bismuth (Bi)-Dissolved			101.6		%		80-120	30-APR-19
Boron (B)-Dissolved			103.6		%		80-120	30-APR-19
Cadmium (Cd)-Dissolved			102.5		%		80-120	30-APR-19
Calcium (Ca)-Dissolved			106.4		%		80-120	30-APR-19
Chromium (Cr)-Dissolved			100.6		%		80-120	30-APR-19
Cobalt (Co)-Dissolved			102.5		%		80-120	30-APR-19
Copper (Cu)-Dissolved			101.0		%		80-120	30-APR-19
Iron (Fe)-Dissolved			100.4		%		80-120	30-APR-19
Lead (Pb)-Dissolved			104.8		%		80-120	30-APR-19
Lithium (Li)-Dissolved			110.8		%		80-120	30-APR-19
Magnesium (Mg)-Dissolved			102.8		%		80-120	30-APR-19
Manganese (Mn)-Dissolved			100.1		%		80-120	30-APR-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	30-APR-19
Nickel (Ni)-Dissolved			101.2		%		80-120	30-APR-19
Potassium (K)-Dissolved			104.3		%		80-120	30-APR-19
Selenium (Se)-Dissolved			106.4		%		80-120	30-APR-19
Silicon (Si)-Dissolved			94.8		%		60-140	30-APR-19
Silver (Ag)-Dissolved			97.6		%		80-120	30-APR-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618634</b>							
<b>WG3037783-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			114.8		%		80-120	30-APR-19
Strontium (Sr)-Dissolved			96.6		%		80-120	30-APR-19
Thallium (Tl)-Dissolved			99.6		%		80-120	30-APR-19
Tin (Sn)-Dissolved			101.2		%		80-120	30-APR-19
Titanium (Ti)-Dissolved			98.1		%		80-120	30-APR-19
Uranium (U)-Dissolved			107.4		%		80-120	30-APR-19
Vanadium (V)-Dissolved			102.4		%		80-120	30-APR-19
Zinc (Zn)-Dissolved			110.1		%		80-120	30-APR-19
<b>WG3037783-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-APR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-APR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-APR-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618634</b>							
<b>WG3037783-1</b>	<b>MB</b>	<b>NP</b>						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-APR-19
<b>Batch</b>	<b>R4618783</b>							
<b>WG3038612-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.0		%		80-120	01-MAY-19
Antimony (Sb)-Dissolved			100.2		%		80-120	01-MAY-19
Arsenic (As)-Dissolved			98.5		%		80-120	01-MAY-19
Barium (Ba)-Dissolved			102.0		%		80-120	01-MAY-19
Bismuth (Bi)-Dissolved			99.2		%		80-120	01-MAY-19
Boron (B)-Dissolved			97.2		%		80-120	01-MAY-19
Cadmium (Cd)-Dissolved			100.1		%		80-120	01-MAY-19
Calcium (Ca)-Dissolved			101.9		%		80-120	01-MAY-19
Chromium (Cr)-Dissolved			100.9		%		80-120	01-MAY-19
Cobalt (Co)-Dissolved			101.2		%		80-120	01-MAY-19
Copper (Cu)-Dissolved			98.1		%		80-120	01-MAY-19
Iron (Fe)-Dissolved			92.0		%		80-120	01-MAY-19
Lead (Pb)-Dissolved			96.2		%		80-120	01-MAY-19
Lithium (Li)-Dissolved			101.0		%		80-120	01-MAY-19
Magnesium (Mg)-Dissolved			104.4		%		80-120	01-MAY-19
Manganese (Mn)-Dissolved			100.0		%		80-120	01-MAY-19
Molybdenum (Mo)-Dissolved			99.4		%		80-120	01-MAY-19
Nickel (Ni)-Dissolved			98.3		%		80-120	01-MAY-19
Potassium (K)-Dissolved			98.0		%		80-120	01-MAY-19
Selenium (Se)-Dissolved			96.9		%		80-120	01-MAY-19
Silicon (Si)-Dissolved			96.9		%		60-140	01-MAY-19
Silver (Ag)-Dissolved			98.7		%		80-120	01-MAY-19
Sodium (Na)-Dissolved			103.1		%		80-120	01-MAY-19
Strontium (Sr)-Dissolved			103.8		%		80-120	01-MAY-19
Thallium (Tl)-Dissolved			99.6		%		80-120	01-MAY-19
Tin (Sn)-Dissolved			96.0		%		80-120	01-MAY-19
Titanium (Ti)-Dissolved			94.4		%		80-120	01-MAY-19





## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618783</b>							
<b>WG3038612-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			98.8		%		80-120	01-MAY-19
Vanadium (V)-Dissolved			101.6		%		80-120	01-MAY-19
Zinc (Zn)-Dissolved			98.4		%		80-120	01-MAY-19
<b>WG3038612-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-MAY-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618346</b>							
<b>WG3037775-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			99.8		%		80-120	30-APR-19
Antimony (Sb)-Total			104.1		%		80-120	30-APR-19
Arsenic (As)-Total			100.6		%		80-120	30-APR-19
Barium (Ba)-Total			102.8		%		80-120	30-APR-19
Bismuth (Bi)-Total			96.4		%		80-120	30-APR-19
Boron (B)-Total			95.7		%		80-120	30-APR-19
Cadmium (Cd)-Total			100.8		%		80-120	30-APR-19
Calcium (Ca)-Total			102.0		%		80-120	30-APR-19
Chromium (Cr)-Total			100.4		%		80-120	30-APR-19
Cobalt (Co)-Total			98.7		%		80-120	30-APR-19
Copper (Cu)-Total			98.3		%		80-120	30-APR-19
Iron (Fe)-Total			101.2		%		80-120	30-APR-19
Lead (Pb)-Total			97.8		%		80-120	30-APR-19
Lithium (Li)-Total			97.6		%		80-120	30-APR-19
Magnesium (Mg)-Total			100.4		%		80-120	30-APR-19
Manganese (Mn)-Total			103.3		%		80-120	30-APR-19
Molybdenum (Mo)-Total			100.3		%		80-120	30-APR-19
Nickel (Ni)-Total			97.8		%		80-120	30-APR-19
Potassium (K)-Total			98.4		%		80-120	30-APR-19
Selenium (Se)-Total			101.6		%		80-120	30-APR-19
Silicon (Si)-Total			99.1		%		80-120	30-APR-19
Silver (Ag)-Total			104.0		%		80-120	30-APR-19
Sodium (Na)-Total			101.0		%		80-120	30-APR-19
Strontium (Sr)-Total			102.5		%		80-120	30-APR-19
Thallium (Tl)-Total			99.0		%		80-120	30-APR-19
Tin (Sn)-Total			98.2		%		80-120	30-APR-19
Titanium (Ti)-Total			92.6		%		80-120	30-APR-19
Uranium (U)-Total			103.4		%		80-120	30-APR-19
Vanadium (V)-Total			102.7		%		80-120	30-APR-19
Zinc (Zn)-Total			99.2		%		80-120	30-APR-19
<b>WG3037775-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	30-APR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-APR-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4618346</b>							
<b>WG3037775-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-APR-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-APR-19
Boron (B)-Total			<0.010		mg/L		0.01	30-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	30-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	30-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-APR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-APR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	30-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-APR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-APR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	30-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	30-APR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	30-APR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-APR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	30-APR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	30-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	30-APR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	30-APR-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-APR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-APR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-APR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-APR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-APR-19
<b>Batch</b>	<b>R4618783</b>							
<b>WG3038603-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			104.2		%		80-120	01-MAY-19
Antimony (Sb)-Total			102.0		%		80-120	01-MAY-19
Arsenic (As)-Total			97.3		%		80-120	01-MAY-19
Barium (Ba)-Total			105.4		%		80-120	01-MAY-19
Bismuth (Bi)-Total			102.6		%		80-120	01-MAY-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4618783</b>							
<b>WG3038603-2</b>	<b>LCS</b>							
Boron (B)-Total			99.8		%		80-120	01-MAY-19
Cadmium (Cd)-Total			104.4		%		80-120	01-MAY-19
Calcium (Ca)-Total			103.0		%		80-120	01-MAY-19
Chromium (Cr)-Total			102.2		%		80-120	01-MAY-19
Cobalt (Co)-Total			102.4		%		80-120	01-MAY-19
Copper (Cu)-Total			99.9		%		80-120	01-MAY-19
Iron (Fe)-Total			92.7		%		80-120	01-MAY-19
Lead (Pb)-Total			99.7		%		80-120	01-MAY-19
Lithium (Li)-Total			102.9		%		80-120	01-MAY-19
Magnesium (Mg)-Total			102.7		%		80-120	01-MAY-19
Manganese (Mn)-Total			100.7		%		80-120	01-MAY-19
Molybdenum (Mo)-Total			100.3		%		80-120	01-MAY-19
Nickel (Ni)-Total			101.2		%		80-120	01-MAY-19
Potassium (K)-Total			99.1		%		80-120	01-MAY-19
Selenium (Se)-Total			100.8		%		80-120	01-MAY-19
Silicon (Si)-Total			95.3		%		80-120	01-MAY-19
Silver (Ag)-Total			98.9		%		80-120	01-MAY-19
Sodium (Na)-Total			102.9		%		80-120	01-MAY-19
Strontium (Sr)-Total			103.6		%		80-120	01-MAY-19
Thallium (Tl)-Total			102.0		%		80-120	01-MAY-19
Tin (Sn)-Total			96.0		%		80-120	01-MAY-19
Titanium (Ti)-Total			92.5		%		80-120	01-MAY-19
Uranium (U)-Total			101.2		%		80-120	01-MAY-19
Vanadium (V)-Total			101.6		%		80-120	01-MAY-19
Zinc (Zn)-Total			103.2		%		80-120	01-MAY-19
<b>WG3038603-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	01-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-MAY-19



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4618783</b>							
<b>WG3038603-1</b>	<b>MB</b>							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-MAY-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4622287</b>							
<b>WG3040932-2</b>	<b>LCS</b>							
Ammonia as N			94.6		%		85-115	02-MAY-19
<b>WG3040932-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-MAY-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4618351</b>							
<b>WG3038187-2</b>	<b>LCS</b>							
Nitrite (as N)			105.8		%		90-110	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-APR-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4618351							
<b>WG3038187-2</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-APR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4619972							
<b>WG3039361-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	01-MAY-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4621768							
<b>WG3040492-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.5		%		80-120	02-MAY-19
<b>WG3040492-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4622768							
<b>WG3041721-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	03-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4616689							
<b>WG3036341-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.9		%		80-120	27-APR-19
<b>WG3036341-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-APR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4618351							
<b>WG3038187-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.7		%		90-110	26-APR-19
<b>WG3038187-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-APR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4621312							
<b>WG3038811-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.1		%		85-115	01-MAY-19
<b>WG3038811-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
Batch R4621312								
WG3038811-1 MB								
Total Dissolved Solids			<10		mg/L		10	01-MAY-19
<b>TKN-L-F-CL</b>								
Batch R4622466								
WG3041319-7 DUP		L2263544-8						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-MAY-19
WG3041319-10 LCS								
Total Kjeldahl Nitrogen			97.7		%		75-125	03-MAY-19
WG3041319-2 LCS								
Total Kjeldahl Nitrogen			104.8		%		75-125	03-MAY-19
WG3041319-6 LCS								
Total Kjeldahl Nitrogen			102.5		%		75-125	03-MAY-19
WG3041319-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-MAY-19
WG3041319-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-MAY-19
WG3041319-9 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-MAY-19
WG3041319-8 MS		L2263544-8						
Total Kjeldahl Nitrogen			109.0		%		70-130	03-MAY-19
<b>TSS-L-CL</b>								
Batch R4620566								
WG3038792-5 LCS								
Total Suspended Solids			104.5		%		85-115	01-MAY-19
WG3038792-4 MB								
Total Suspended Solids			<1.0		mg/L		1	01-MAY-19
<b>TURBIDITY-CL</b>								
Batch R4615246								
WG3036085-11 LCS								
Turbidity			97.0		%		85-115	26-APR-19
WG3036085-10 MB								
Turbidity			<0.10		NTU		0.1	26-APR-19

# Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2263544

Report Date: 06-MAY-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	25-APR-19 12:00	01-MAY-19 09:00	0.25	141	hours	EHTR-FM
	3	25-APR-19 12:00	01-MAY-19 09:00	0.25	141	hours	EHTR-FM
	4	25-APR-19 11:10	01-MAY-19 09:00	0.25	142	hours	EHTR-FM
	6	25-APR-19 12:35	01-MAY-19 09:30	0.25	141	hours	EHTR-FM
	8	25-APR-19 12:00	01-MAY-19 09:30	0.25	142	hours	EHTR-FM
pH							
	1	25-APR-19 12:00	03-MAY-19 09:00	0.25	189	hours	EHTR-FM
	3	25-APR-19 12:00	03-MAY-19 09:00	0.25	189	hours	EHTR-FM
	4	25-APR-19 11:10	03-MAY-19 09:00	0.25	190	hours	EHTR-FM
	6	25-APR-19 12:35	03-MAY-19 09:00	0.25	188	hours	EHTR-FM
	8	25-APR-19 12:00	03-MAY-19 09:00	0.25	189	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2263544 were received on 26-APR-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **QTR\_GW\_2019-04-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equils-GHO-Field@teck.co	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013			
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-3048			Phone Number	403 407 1794							

SAMPLE DETAILS							ANALYSIS REQUESTED															
Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	Y	N	N									
 <p>L2263544-COFC</p>																						
1	GH_GHER1_WG_2019-04-01_NP	GH_GHER1	WG	2019/04/25		G	8	1	1	1	1	1	1	1								
2	GH_GHER1_WG_2019-04-01_FB-HG	GH_GHER1	WG	2019/04/25		G	1															
3	GH_GHLRP1_WG_2019-04-01_NP	GH_GHLRP1	WG	2019/04/25		G	8	1	1	1	1	1	1	1								
4	GH_MW-GHC-1D_WG_2019-04-01_NP	GH_MW-GHC-1D	WG	2019/04/25	11:10	G	8	1	1	1	1	1	1	1								
5	GH_MW-GHC-1D_WG_2019-04-01_FB-HG	GH_MW-GHC-1D	WG	2019/04/25	11:10	G	1															
6	GH_MW-GHC-1S_WG_2019-04-01_NP	GH_MW-GHC-1S	WG	2019/04/25	12:55	G	8	1	1	1	1	1	1	1								
7	GH_MW-GHC-1S_WG_2019-04-01_FB-HG	GH_MW-GHC-1S	WG	2019/04/25	12:30	G	1															
8	GH_TRIPGW_WG_2019-04-01_NP	GH_TRIPGW	WG	2019/04/25		G	6	1	1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:      RELINQUISHED BY/AFFILIATION:      DATE/TIME:      ACCEPTED BY/AFFILIATION:      DATE/TIME:

OK 4/26 0900  
602

SERVICE REQUEST (rush - subject to availability)

Regular (default)       Priority (2-3 business days) - 50% surcharge      Emergency (1 Business Day) - 100% surcharge      For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name:      Mobile #:      Sampler's Signature:      Date/Time:



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 30-APR-19  
Report Date: 09-MAY-19 16:58 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2265097  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265097-2 GH_GA-MW-1_WG_2019-04-01_NP							
Sampled By: JF on 29-APR-19 @ 12:15							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-MAY-19	R4620946
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		02-MAY-19	R4620028
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0536		0.0030	mg/L		02-MAY-19	R4620946
Antimony (Sb)-Total	0.00067		0.00010	mg/L		02-MAY-19	R4620946
Arsenic (As)-Total	0.00046		0.00010	mg/L		02-MAY-19	R4620946
Barium (Ba)-Total	0.0434		0.00010	mg/L		02-MAY-19	R4620946
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-MAY-19	R4620946
Boron (B)-Total	0.858		0.010	mg/L		02-MAY-19	R4620946
Cadmium (Cd)-Total	0.0241		0.0050	ug/L		02-MAY-19	R4620946
Calcium (Ca)-Total	63.7		0.050	mg/L		02-MAY-19	R4620946
Chromium (Cr)-Total	0.00034		0.00010	mg/L		02-MAY-19	R4620946
Cobalt (Co)-Total	0.35		0.10	ug/L		02-MAY-19	R4620946
Copper (Cu)-Total	0.0342		0.00050	mg/L		02-MAY-19	R4620946
Iron (Fe)-Total	0.105		0.010	mg/L		02-MAY-19	R4620946
Lead (Pb)-Total	<0.000050		0.000050	mg/L		02-MAY-19	R4620946
Lithium (Li)-Total	0.168		0.0010	mg/L		02-MAY-19	R4620946
Magnesium (Mg)-Total	34.1		0.10	mg/L		02-MAY-19	R4620946
Manganese (Mn)-Total	0.111		0.00010	mg/L		02-MAY-19	R4620946
Molybdenum (Mo)-Total	0.00501		0.000050	mg/L		02-MAY-19	R4620946
Nickel (Ni)-Total	0.00459		0.00050	mg/L		02-MAY-19	R4620946
Potassium (K)-Total	3.13		0.050	mg/L		02-MAY-19	R4620946
Selenium (Se)-Total	0.144		0.050	ug/L		02-MAY-19	R4620946
Silicon (Si)-Total	4.00		0.10	mg/L		02-MAY-19	R4620946
Silver (Ag)-Total	0.000011		0.000010	mg/L		02-MAY-19	R4620946
Sodium (Na)-Total	156		0.050	mg/L		02-MAY-19	R4620946
Strontium (Sr)-Total	4.28		0.00020	mg/L		02-MAY-19	R4620946
Thallium (Tl)-Total	0.000027		0.000010	mg/L		02-MAY-19	R4620946
Tin (Sn)-Total	<0.00010		0.00010	mg/L		02-MAY-19	R4620946
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-MAY-19	R4620946
Uranium (U)-Total	0.00180		0.000010	mg/L		02-MAY-19	R4620946
Vanadium (V)-Total	<0.00050		0.00050	mg/L		02-MAY-19	R4620946
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		02-MAY-19	R4620946
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.7		1.0	mg/L		07-MAY-19	R4628503
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	468		1.0	mg/L		05-MAY-19	R4625136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		05-MAY-19	R4625136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		05-MAY-19	R4625136
Alkalinity, Total (as CaCO3)	468		1.0	mg/L		05-MAY-19	R4625136
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0841		0.0050	mg/L		07-MAY-19	R4628550
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-APR-19	R4619166
<b>Chloride in Water by IC</b>							
Chloride (Cl)	12.9	DLHC	2.5	mg/L		30-APR-19	R4619166
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1060		2.0	uS/cm		05-MAY-19	R4625136
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.73	DLHC	0.10	mg/L		30-APR-19	R4619166

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265097-2 GH_GA-MW-1_WG_2019-04-01_NP Sampled By: JF on 29-APR-19 @ 12:15 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-7.2			%		08-MAY-19	
Anion Sum	15.1			meq/L		08-MAY-19	
Cation Sum	13.1			meq/L		08-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	86.6		-100	%		08-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.23	DLHC	0.025	mg/L		30-APR-19	R4619166
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-APR-19	R4619166
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0297		0.0010	mg/L		01-MAY-19	R4621749
<b>Oxidation redution potential by elect.</b>							
ORP	413		-1000	mV		03-MAY-19	R4622562
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0353		0.0020	mg/L		05-MAY-19	R4623068
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	254	DLHC	1.5	mg/L		30-APR-19	R4619166
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	709	DLHC	20	mg/L		03-MAY-19	R4624717
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.1		1.0	mg/L		03-MAY-19	R4624109
<b>Turbidity</b>							
Turbidity	2.19		0.10	NTU		01-MAY-19	R4619985
<b>pH</b>							
pH	8.13		0.10	pH		05-MAY-19	R4625136
L2265097-3 GH_GA-MW-4_WG_2019-04-01_FB-HG Sampled By: JF on 29-APR-19 @ 13:40 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		07-MAY-19	R4625689
L2265097-4 GH_GA-MW-4_WG_2019-04-01_NP Sampled By: JF on 29-APR-19 @ 13:40 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-MAY-19	R4623008
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		08-MAY-19	R4628532
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		07-MAY-19	R4625689
Total Organic Carbon	<0.50		0.50	mg/L		04-MAY-19	R4623008
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-MAY-19	02-MAY-19	R4621237
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4619999
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-MAY-19	02-MAY-19	R4620028
Dissolved Mercury Filtration Location	FIELD					02-MAY-19	R4620388
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-MAY-19	R4619999
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-MAY-19	02-MAY-19	R4621237
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237
Barium (Ba)-Dissolved	0.0740		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265097-4 GH_GA-MW-4_WG_2019-04-01_NP							
Sampled By: JF on 29-APR-19 @ 13:40							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	02-MAY-19	R4621237
Boron (B)-Dissolved	0.011		0.010	mg/L	02-MAY-19	03-MAY-19	R4621237
Cadmium (Cd)-Dissolved	0.0056		0.0050	ug/L	02-MAY-19	02-MAY-19	R4621237
Calcium (Ca)-Dissolved	46.8		0.050	mg/L	02-MAY-19	02-MAY-19	R4621237
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-MAY-19	02-MAY-19	R4621237
Copper (Cu)-Dissolved	<0.000050		0.00050	mg/L	02-MAY-19	02-MAY-19	R4621237
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	02-MAY-19	R4621237
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-MAY-19	02-MAY-19	R4621237
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	02-MAY-19	02-MAY-19	R4621237
Magnesium (Mg)-Dissolved	18.1		0.10	mg/L	02-MAY-19	02-MAY-19	R4621237
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237
Molybdenum (Mo)-Dissolved	0.00190		0.000050	mg/L	02-MAY-19	02-MAY-19	R4621237
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	02-MAY-19	R4621237
Potassium (K)-Dissolved	0.905		0.050	mg/L	02-MAY-19	02-MAY-19	R4621237
Selenium (Se)-Dissolved	1.74		0.050	ug/L	02-MAY-19	02-MAY-19	R4621237
Silicon (Si)-Dissolved	2.27		0.050	mg/L	02-MAY-19	02-MAY-19	R4621237
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	02-MAY-19	R4621237
Sodium (Na)-Dissolved	5.29		0.050	mg/L	02-MAY-19	02-MAY-19	R4621237
Strontium (Sr)-Dissolved	0.178		0.00020	mg/L	02-MAY-19	02-MAY-19	R4621237
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-MAY-19	02-MAY-19	R4621237
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-MAY-19	02-MAY-19	R4621237
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-MAY-19	02-MAY-19	R4621237
Uranium (U)-Dissolved	0.00141		0.000010	mg/L	02-MAY-19	02-MAY-19	R4621237
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-MAY-19	02-MAY-19	R4621237
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-MAY-19	02-MAY-19	R4621237
<b>Hardness</b>							
Hardness (as CaCO3)	191		0.50	mg/L		03-MAY-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-MAY-19	R4620946
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		02-MAY-19	R4620028
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		02-MAY-19	R4620946
Antimony (Sb)-Total	0.00013		0.00010	mg/L		02-MAY-19	R4620946
Arsenic (As)-Total	<0.00010		0.00010	mg/L		02-MAY-19	R4620946
Barium (Ba)-Total	0.0720		0.00010	mg/L		02-MAY-19	R4620946
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-MAY-19	R4620946
Boron (B)-Total	0.011		0.010	mg/L		03-MAY-19	R4621237
Cadmium (Cd)-Total	0.0051		0.0050	ug/L		02-MAY-19	R4620946
Calcium (Ca)-Total	45.9		0.050	mg/L		02-MAY-19	R4620946
Chromium (Cr)-Total	0.00022		0.00010	mg/L		02-MAY-19	R4620946
Cobalt (Co)-Total	<0.10		0.10	ug/L		02-MAY-19	R4620946
Copper (Cu)-Total	0.00052		0.00050	mg/L		02-MAY-19	R4620946
Iron (Fe)-Total	<0.010		0.010	mg/L		02-MAY-19	R4620946
Lead (Pb)-Total	<0.000050		0.000050	mg/L		02-MAY-19	R4620946
Lithium (Li)-Total	0.0173		0.0010	mg/L		02-MAY-19	R4620946
Magnesium (Mg)-Total	18.1		0.10	mg/L		02-MAY-19	R4620946
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		02-MAY-19	R4620946
Molybdenum (Mo)-Total	0.00187		0.000050	mg/L		02-MAY-19	R4620946
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		02-MAY-19	R4620946

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265097-4 GH_GA-MW-4_WG_2019-04-01_NP							
Sampled By: JF on 29-APR-19 @ 13:40							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Potassium (K)-Total	0.904		0.050	mg/L		02-MAY-19	R4620946
Selenium (Se)-Total	1.64		0.050	ug/L		02-MAY-19	R4620946
Silicon (Si)-Total	2.33		0.10	mg/L		02-MAY-19	R4620946
Silver (Ag)-Total	<0.000010		0.000010	mg/L		02-MAY-19	R4620946
Sodium (Na)-Total	5.35		0.050	mg/L		02-MAY-19	R4620946
Strontium (Sr)-Total	0.165		0.00020	mg/L		02-MAY-19	R4620946
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		02-MAY-19	R4620946
Tin (Sn)-Total	<0.00010		0.00010	mg/L		02-MAY-19	R4620946
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-MAY-19	R4620946
Uranium (U)-Total	0.00135		0.000010	mg/L		02-MAY-19	R4620946
Vanadium (V)-Total	<0.00050		0.00050	mg/L		02-MAY-19	R4620946
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		02-MAY-19	R4620946
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.7		1.0	mg/L		07-MAY-19	R4628503
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	226		1.0	mg/L		09-MAY-19	R4625136
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		09-MAY-19	R4625136
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		09-MAY-19	R4625136
Alkalinity, Total (as CaCO3)	226		1.0	mg/L		09-MAY-19	R4625136
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		07-MAY-19	R4628550
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		30-APR-19	R4619166
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.84		0.50	mg/L		30-APR-19	R4619166
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	347		2.0	uS/cm		05-MAY-19	R4625136
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.161		0.020	mg/L		30-APR-19	R4619166
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-12.8			%		09-MAY-19	
Anion Sum	5.28			meq/L		09-MAY-19	
Cation Sum	4.08			meq/L		09-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	77.3	RRV	-100	%		09-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.375		0.0050	mg/L		30-APR-19	R4619166
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-APR-19	R4619166
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		01-MAY-19	R4621749
<b>Oxidation redution potential by elect.</b>							
ORP	442		-1000	mV		03-MAY-19	R4622562
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		05-MAY-19	R4623068
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	29.4		0.30	mg/L		30-APR-19	R4619166
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	209	DLHC	20	mg/L		03-MAY-19	R4624717
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-MAY-19	R4624109

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265097-4    GH_GA-MW-4_WG_2019-04-01_NP Sampled By:   JF on 29-APR-19 @ 13:40 Matrix:        WG							
<b>Turbidity</b> Turbidity	0.37		0.10	NTU		01-MAY-19	R4619985
<b>pH</b> pH	8.15		0.10	pH		05-MAY-19	R4625136

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

QTR\_GW\_2019-04-01

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4628503							
<b>WG3044267-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.4		%		85-115	07-MAY-19
<b>WG3044267-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	07-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4625136							
<b>WG3042383-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			112.4		%		85-115	05-MAY-19
<b>WG3042383-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4621237							
<b>WG3039764-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.1		%		80-120	02-MAY-19
<b>WG3039764-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4620946							
<b>WG3039645-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			101.1		%		80-120	02-MAY-19
<b>WG3039645-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	02-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4619166							
<b>WG3038959-2</b>	<b>LCS</b>							
Bromide (Br)			104.8		%		85-115	30-APR-19
<b>WG3038959-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-APR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4623008							
<b>WG3042012-7</b>	<b>DUP</b>	<b>L2265097-2</b>						
Dissolved Organic Carbon		2.41	2.46		mg/L	2.2	20	04-MAY-19
<b>WG3042012-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.8		%		80-120	04-MAY-19
<b>WG3042012-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAY-19
<b>WG3042012-8</b>	<b>MS</b>	<b>L2265097-4</b>						



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4623008							
WG3042012-8	MS	L2265097-4						
Dissolved Organic Carbon			96.2		%		70-130	04-MAY-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4623008							
WG3042012-7	DUP	L2265097-2						
Total Organic Carbon			2.15		mg/L	1.5	20	04-MAY-19
WG3042012-6	LCS							
Total Organic Carbon			106.1		%		80-120	04-MAY-19
WG3042012-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	04-MAY-19
WG3042012-8	MS	L2265097-4						
Total Organic Carbon			100.3		%		70-130	04-MAY-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4619166							
WG3038959-2	LCS							
Chloride (Cl)			101.7		%		90-110	30-APR-19
WG3038959-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-APR-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4625136							
WG3042383-2	LCS							
Conductivity (@ 25C)			101.8		%		90-110	05-MAY-19
WG3042383-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-MAY-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4619166							
WG3038959-2	LCS							
Fluoride (F)			108.0		%		90-110	30-APR-19
WG3038959-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-APR-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4620028							
WG3040013-6	LCS							
Mercury (Hg)-Dissolved			102.1		%		80-120	02-MAY-19
WG3040013-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	02-MAY-19



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
Batch	R4620028							
<b>WG3039617-2 LCS</b>								
Mercury (Hg)-Total			102.5		%		80-120	02-MAY-19
<b>WG3039617-1 MB</b>								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-MAY-19
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
Batch	R4625689							
<b>WG3043362-2 LCS</b>								
Mercury (Hg)-Total			102.0		%		80-120	07-MAY-19
<b>WG3043362-1 MB</b>								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	07-MAY-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
Batch	R4621237							
<b>WG3039764-2 LCS</b>								
Aluminum (Al)-Dissolved			101.8		%		80-120	02-MAY-19
Antimony (Sb)-Dissolved			99.95		%		80-120	02-MAY-19
Arsenic (As)-Dissolved			99.7		%		80-120	02-MAY-19
Barium (Ba)-Dissolved			103.2		%		80-120	02-MAY-19
Bismuth (Bi)-Dissolved			106.6		%		80-120	02-MAY-19
Boron (B)-Dissolved			87.7		%		80-120	02-MAY-19
Cadmium (Cd)-Dissolved			100.6		%		80-120	02-MAY-19
Calcium (Ca)-Dissolved			96.2		%		80-120	02-MAY-19
Chromium (Cr)-Dissolved			96.4		%		80-120	02-MAY-19
Cobalt (Co)-Dissolved			98.9		%		80-120	02-MAY-19
Copper (Cu)-Dissolved			99.1		%		80-120	02-MAY-19
Iron (Fe)-Dissolved			103.0		%		80-120	02-MAY-19
Lead (Pb)-Dissolved			105.0		%		80-120	02-MAY-19
Lithium (Li)-Dissolved			98.5		%		80-120	02-MAY-19
Magnesium (Mg)-Dissolved			101.6		%		80-120	02-MAY-19
Manganese (Mn)-Dissolved			100.4		%		80-120	02-MAY-19
Molybdenum (Mo)-Dissolved			103.8		%		80-120	02-MAY-19
Nickel (Ni)-Dissolved			101.2		%		80-120	02-MAY-19
Potassium (K)-Dissolved			100.5		%		80-120	02-MAY-19
Selenium (Se)-Dissolved			99.3		%		80-120	02-MAY-19
Silicon (Si)-Dissolved			97.6		%		60-140	02-MAY-19
Silver (Ag)-Dissolved			103.7		%		80-120	02-MAY-19
Sodium (Na)-Dissolved			100.9		%		80-120	02-MAY-19



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4621237</b>							
<b>WG3039764-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			107.6		%		80-120	02-MAY-19
Thallium (Tl)-Dissolved			107.6		%		80-120	02-MAY-19
Tin (Sn)-Dissolved			99.4		%		80-120	02-MAY-19
Titanium (Ti)-Dissolved			94.2		%		80-120	02-MAY-19
Uranium (U)-Dissolved			109.3		%		80-120	02-MAY-19
Vanadium (V)-Dissolved			100.4		%		80-120	02-MAY-19
Zinc (Zn)-Dissolved			102.0		%		80-120	02-MAY-19
<b>WG3039764-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-MAY-19





## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4621237</b>							
<b>WG3039764-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-MAY-19
Zinc (Zn)-Dissolved			0.0017	MB-LOR	mg/L		0.001	02-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4620946</b>							
<b>WG3039645-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			101.1		%		80-120	02-MAY-19
Antimony (Sb)-Total			106.2		%		80-120	02-MAY-19
Arsenic (As)-Total			100.8		%		80-120	02-MAY-19
Barium (Ba)-Total			102.0		%		80-120	02-MAY-19
Bismuth (Bi)-Total			97.5		%		80-120	02-MAY-19
Boron (B)-Total			94.4		%		80-120	02-MAY-19
Cadmium (Cd)-Total			102.7		%		80-120	02-MAY-19
Calcium (Ca)-Total			100.7		%		80-120	02-MAY-19
Chromium (Cr)-Total			102.2		%		80-120	02-MAY-19
Cobalt (Co)-Total			99.2		%		80-120	02-MAY-19
Copper (Cu)-Total			98.6		%		80-120	02-MAY-19
Iron (Fe)-Total			99.6		%		80-120	02-MAY-19
Lead (Pb)-Total			102.8		%		80-120	02-MAY-19
Lithium (Li)-Total			102.4		%		80-120	02-MAY-19
Magnesium (Mg)-Total			97.7		%		80-120	02-MAY-19
Manganese (Mn)-Total			101.5		%		80-120	02-MAY-19
Molybdenum (Mo)-Total			102.8		%		80-120	02-MAY-19
Nickel (Ni)-Total			103.4		%		80-120	02-MAY-19
Potassium (K)-Total			102.3		%		80-120	02-MAY-19
Selenium (Se)-Total			99.9		%		80-120	02-MAY-19
Silicon (Si)-Total			99.4		%		80-120	02-MAY-19
Silver (Ag)-Total			103.4		%		80-120	02-MAY-19
Sodium (Na)-Total			101.6		%		80-120	02-MAY-19
Strontium (Sr)-Total			104.8		%		80-120	02-MAY-19
Thallium (Tl)-Total			104.1		%		80-120	02-MAY-19
Tin (Sn)-Total			100.6		%		80-120	02-MAY-19
Titanium (Ti)-Total			96.2		%		80-120	02-MAY-19



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4620946</b>							
<b>WG3039645-2</b>	<b>LCS</b>							
Uranium (U)-Total			105.6		%		80-120	02-MAY-19
Vanadium (V)-Total			100.6		%		80-120	02-MAY-19
Zinc (Zn)-Total			99.97		%		80-120	02-MAY-19
<b>WG3039645-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	02-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	02-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	02-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	02-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	02-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	02-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	02-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	02-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	02-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	02-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	02-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	02-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	02-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	02-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	02-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-MAY-19



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4628550							
<b>WG3044233-10</b>	<b>LCS</b>							
Ammonia as N			95.1		%		85-115	07-MAY-19
<b>WG3044233-2</b>	<b>LCS</b>							
Ammonia as N			96.6		%		85-115	07-MAY-19
<b>WG3044233-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-MAY-19
<b>WG3044233-9</b>	<b>MB</b>							
Ammonia as N			0.0050		mg/L		0.005	07-MAY-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4619166							
<b>WG3038959-2</b>	<b>LCS</b>							
Nitrite (as N)			103.3		%		90-110	30-APR-19
<b>WG3038959-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-APR-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4619166							
<b>WG3038959-2</b>	<b>LCS</b>							
Nitrate (as N)			102.0		%		90-110	30-APR-19
<b>WG3038959-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-APR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4622562							
<b>WG3041424-15</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	03-MAY-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4623068							
<b>WG3042065-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.8		%		80-120	05-MAY-19
<b>WG3042065-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4625136							
<b>WG3042383-2</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	05-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4621749							
<b>WG3039457-20</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.8		%		80-120	01-MAY-19
<b>WG3039457-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-MAY-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4619166							
<b>WG3038959-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.6		%		90-110	30-APR-19
<b>WG3038959-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-APR-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4624717							
<b>WG3040840-8</b>	<b>LCS</b>							
Total Dissolved Solids			96.9		%		85-115	03-MAY-19
<b>WG3040840-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	03-MAY-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4628532							
<b>WG3044453-7</b>	<b>DUP</b>	<b>L2265097-4</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-19
<b>WG3044453-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.9		%		75-125	08-MAY-19
<b>WG3044453-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.1		%		75-125	08-MAY-19
<b>WG3044453-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.4		%		75-125	08-MAY-19
<b>WG3044453-20</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.3		%		75-125	08-MAY-19
<b>WG3044453-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.6		%		75-125	08-MAY-19
<b>WG3044453-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.6		%		75-125	08-MAY-19
<b>WG3044453-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19
<b>WG3044453-11</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19
<b>WG3044453-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19



## Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628532</b>							
<b>WG3044453-19</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19
<b>WG3044453-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19
<b>WG3044453-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAY-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4624109</b>							
<b>WG3041108-2</b>	<b>LCS</b>							
Total Suspended Solids			98.7		%		85-115	03-MAY-19
<b>WG3041108-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-MAY-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4619985</b>							
<b>WG3039363-6</b>	<b>DUP</b>	<b>L2265097-2</b>						
Turbidity		2.19	2.18		NTU	0.5	15	01-MAY-19
<b>WG3039363-5</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	01-MAY-19
<b>WG3039363-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-MAY-19

# Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2265097

Report Date: 09-MAY-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	2	29-APR-19 12:15	03-MAY-19 11:40	0.25	96	hours	EHTR-FM
	4	29-APR-19 13:40	03-MAY-19 11:40	0.25	94	hours	EHTR-FM
pH	2	29-APR-19 12:15	05-MAY-19 10:00	0.25	142	hours	EHTR-FM
	4	29-APR-19 13:40	05-MAY-19 10:00	0.25	140	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2265097 were received on 30-APR-19 10:25.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.


Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **QTR\_GW\_2019-04-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jenni Kropp				Lab Contact Lyudmyla Shvets		Email 1: jennifer.kropp@teck.com		X	X	X
Email jennifer.kropp@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: DL-Equis-GMO-Field@teck.co		X	X	X
Address P.O. BOX 5000				Address 2559 29 Street NE		Email 3: teckcoal@equisonline.com				X
City Elkford		Province BC		City Calgary		Province AB	PO number			
Postal Code V0B1H0		Country Canada		Postal Code T1Y 7B5		Country Canada				
Phone Number 250-865-3048				Phone Number 403 407 1794						

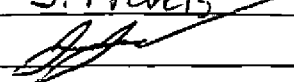
SAMPLE DETAILS								ANALYSIS REQUESTED									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	Y	N	N				
								Y	N	Y	Y	N	N				
								H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3			
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA		
GH_GA-MW-1_WG_2019-04-01_FB-HG	GH_GA-MW-1	WG		2019/04/29	12:15	G	1										
GH_GA-MW-1_WG_2019-04-01_NP	GH_GA-MW-1	WG		2019/04/29	12:15	G	8	1	1	1	1	1	1	1	1		
GH_GA-MW-4_WG_2019-04-01_FB-IIG	GH_GA-MW-4	WG		2019/04/29	13:40	G	1								1		
GH_GA-MW-4_WG_2019-04-01_NP	GH_GA-MW-4	WG		2019/04/29	13:40	G	8	1	1	1	1	1	1	1	1		

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:      RELINQUISHED BY/AFFILIATION:      DATE/TIME:      ACCEPTED BY/AFFILIATION:      DATE/TIME:

      4/20/19 JS

SERVICE REQUEST (rush subject to availability):

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
---------------------	--	---	---

Sampler's Name: **J. Francis**      Mobile #:      Date/Time: **04/29/2019**  
 Sampler's Signature: 

7c





TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 01-MAY-19  
Report Date: 12-MAY-19 16:07 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2265938  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265938-2 GH_MW-RLP-1D_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-APR-19 @ 12:00							
Matrix: WG							
<b>Hardness</b>							
Hardness (as CaCO3)	271		0.50	mg/L		07-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.056		0.020	ug/L		06-MAY-19	R4624126
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.737		0.0030	mg/L		06-MAY-19	R4624126
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		06-MAY-19	R4624126
Arsenic (As)-Total	0.00192		0.00010	mg/L		06-MAY-19	R4624126
Barium (Ba)-Total	0.0478		0.00010	mg/L		06-MAY-19	R4624126
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		06-MAY-19	R4624126
Boron (B)-Total	0.015		0.010	mg/L		06-MAY-19	R4624126
Cadmium (Cd)-Total	0.0424		0.0050	ug/L		06-MAY-19	R4624126
Calcium (Ca)-Total	60.1		0.050	mg/L		06-MAY-19	R4624126
Chromium (Cr)-Total	0.00112		0.00010	mg/L		06-MAY-19	R4624126
Cobalt (Co)-Total	0.33		0.10	ug/L		06-MAY-19	R4624126
Copper (Cu)-Total	0.00106		0.00050	mg/L		06-MAY-19	R4624126
Iron (Fe)-Total	1.52		0.010	mg/L		06-MAY-19	R4624126
Lead (Pb)-Total	0.000525		0.000050	mg/L		06-MAY-19	R4624126
Lithium (Li)-Total	0.0076		0.0010	mg/L		06-MAY-19	R4624126
Magnesium (Mg)-Total	28.1		0.10	mg/L		06-MAY-19	R4624126
Manganese (Mn)-Total	0.110		0.00010	mg/L		06-MAY-19	R4624126
Molybdenum (Mo)-Total	0.00387		0.000050	mg/L		06-MAY-19	R4624126
Nickel (Ni)-Total	0.00142		0.00050	mg/L		06-MAY-19	R4624126
Potassium (K)-Total	1.41		0.050	mg/L		06-MAY-19	R4624126
Selenium (Se)-Total	0.093		0.050	ug/L		06-MAY-19	R4625311
Silicon (Si)-Total	6.12		0.10	mg/L		06-MAY-19	R4624126
Silver (Ag)-Total	0.000019		0.000010	mg/L		06-MAY-19	R4624126
Sodium (Na)-Total	3.22		0.050	mg/L		06-MAY-19	R4624126
Strontium (Sr)-Total	0.192		0.00020	mg/L		06-MAY-19	R4624126
Thallium (Tl)-Total	0.000024		0.000010	mg/L		06-MAY-19	R4624126
Tin (Sn)-Total	0.00040		0.00010	mg/L		06-MAY-19	R4624126
Titanium (Ti)-Total	0.012		0.010	mg/L		06-MAY-19	R4624126
Uranium (U)-Total	0.00124		0.000010	mg/L		06-MAY-19	R4624126
Vanadium (V)-Total	0.00231		0.00050	mg/L		06-MAY-19	R4624126
Zinc (Zn)-Total	0.128		0.0030	mg/L		06-MAY-19	R4624126
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.0		1.0	mg/L		08-MAY-19	R4629248
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	361		1.0	mg/L		06-MAY-19	R4625674
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		06-MAY-19	R4625674
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-MAY-19	R4625674
Alkalinity, Total (as CaCO3)	361		1.0	mg/L		06-MAY-19	R4625674
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0716		0.0050	mg/L		08-MAY-19	R4629249
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-MAY-19	R4620230
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		01-MAY-19	R4620230
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	473		2.0	uS/cm		06-MAY-19	R4625674
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.82		0.020	mg/L		01-MAY-19	R4620230

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2265938-2 GH_MW-RLP-1D_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-APR-19 @ 12:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-18.1			%		09-MAY-19	
Anion Sum	8.13			meq/L		09-MAY-19	
Cation Sum	5.64			meq/L		09-MAY-19	
<b>Ion Balance Calculation</b>							
Ion Balance	69.3	RRV	-100	%		10-MAY-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		01-MAY-19	R4620230
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-MAY-19	R4620230
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-MAY-19	R4621749
<b>Oxidation redution potential by elect.</b>							
ORP	464		-1000	mV		07-MAY-19	R4627506
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0413		0.0020	mg/L		07-MAY-19	R4626727
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	40.0		0.30	mg/L		01-MAY-19	R4620230
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	266	DLHC	20	mg/L		06-MAY-19	R4626031
<b>Total Suspended Solids</b>							
Total Suspended Solids	36.8		1.0	mg/L		06-MAY-19	R4626033
<b>Turbidity</b>							
Turbidity	50.8		0.10	NTU		02-MAY-19	R4621931
<b>pH</b>							
pH	8.14		0.10	pH		06-MAY-19	R4625674

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW\_2019-04-01

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4629248</b>							
<b>WG3045500-3</b>	<b>DUP</b>	<b>L2265938-2</b>						
Acidity (as CaCO3)		3.0	3.0		mg/L	2.7	20	08-MAY-19
<b>WG3045500-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.8		%		85-115	08-MAY-19
<b>WG3045500-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	08-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4625674</b>							
<b>WG3043217-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.8		%		85-115	06-MAY-19
<b>WG3043217-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.0		mg/L		1	06-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4625640</b>							
<b>WG3042594-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.6		%		80-120	07-MAY-19
<b>WG3042594-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4624126</b>							
<b>WG3041997-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.2		%		80-120	06-MAY-19
<b>WG3041997-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	06-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4620230</b>							
<b>WG3039933-14</b>	<b>LCS</b>							
Bromide (Br)			99.8		%		85-115	01-MAY-19
<b>WG3039933-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628526</b>							
<b>WG3044405-7</b>	<b>DUP</b>	<b>L2265938-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-MAY-19
<b>WG3044405-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			104.7		%		80-120	07-MAY-19
<b>WG3044405-5</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4628526							
<b>WG3044405-5 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-MAY-19
<b>WG3044405-8 MS</b>		<b>L2265938-2</b>						
Dissolved Organic Carbon			107.4		%		70-130	07-MAY-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4628526							
<b>WG3044405-7 DUP</b>		<b>L2265938-2</b>						
Total Organic Carbon		1.67	1.58		mg/L	5.4	20	07-MAY-19
<b>WG3044405-6 LCS</b>								
Total Organic Carbon			108.7		%		80-120	07-MAY-19
<b>WG3044405-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	07-MAY-19
<b>WG3044405-8 MS</b>		<b>L2265938-2</b>						
Total Organic Carbon			108.0		%		70-130	07-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4620230							
<b>WG3039933-14 LCS</b>								
Chloride (Cl)			99.2		%		90-110	01-MAY-19
<b>WG3039933-13 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	01-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4625674							
<b>WG3043217-5 LCS</b>								
Conductivity (@ 25C)			98.6		%		90-110	06-MAY-19
<b>WG3043217-4 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	06-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4620230							
<b>WG3039933-14 LCS</b>								
Fluoride (F)			102.5		%		90-110	01-MAY-19
<b>WG3039933-13 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	01-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4623075							
<b>WG3041437-6 LCS</b>								
Mercury (Hg)-Dissolved			97.7		%		80-120	05-MAY-19
<b>WG3041437-5 MB</b>		<b>LF</b>						



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4623075							
<b>WG3041437-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-MAY-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch	R4623075							
<b>WG3042057-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.9		%		80-120	05-MAY-19
<b>WG3042057-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	05-MAY-19
<b>HG-T-U-CVAF-VA</b> <b>Water</b>								
Batch	R4629289							
<b>WG3045268-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			92.2		%		80-120	09-MAY-19
<b>WG3045268-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	09-MAY-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch	R4625640							
<b>WG3042594-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.8		%		80-120	07-MAY-19
Antimony (Sb)-Dissolved			98.5		%		80-120	07-MAY-19
Arsenic (As)-Dissolved			105.2		%		80-120	07-MAY-19
Barium (Ba)-Dissolved			112.1		%		80-120	07-MAY-19
Bismuth (Bi)-Dissolved			101.5		%		80-120	07-MAY-19
Boron (B)-Dissolved			99.6		%		80-120	07-MAY-19
Cadmium (Cd)-Dissolved			105.3		%		80-120	07-MAY-19
Calcium (Ca)-Dissolved			99.7		%		80-120	07-MAY-19
Chromium (Cr)-Dissolved			103.3		%		80-120	07-MAY-19
Cobalt (Co)-Dissolved			104.2		%		80-120	07-MAY-19
Copper (Cu)-Dissolved			102.0		%		80-120	07-MAY-19
Iron (Fe)-Dissolved			98.8		%		80-120	07-MAY-19
Lead (Pb)-Dissolved			104.4		%		80-120	07-MAY-19
Lithium (Li)-Dissolved			98.4		%		80-120	07-MAY-19
Magnesium (Mg)-Dissolved			105.0		%		80-120	07-MAY-19
Manganese (Mn)-Dissolved			104.2		%		80-120	07-MAY-19
Molybdenum (Mo)-Dissolved			99.3		%		80-120	07-MAY-19
Nickel (Ni)-Dissolved			105.4		%		80-120	07-MAY-19



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4625640</b>							
<b>WG3042594-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			107.2		%		80-120	07-MAY-19
Selenium (Se)-Dissolved			98.0		%		80-120	07-MAY-19
Silicon (Si)-Dissolved			110.3		%		60-140	07-MAY-19
Silver (Ag)-Dissolved			99.4		%		80-120	07-MAY-19
Sodium (Na)-Dissolved			108.7		%		80-120	07-MAY-19
Strontium (Sr)-Dissolved			100.9		%		80-120	07-MAY-19
Thallium (Tl)-Dissolved			102.7		%		80-120	07-MAY-19
Tin (Sn)-Dissolved			99.96		%		80-120	07-MAY-19
Titanium (Ti)-Dissolved			98.7		%		80-120	07-MAY-19
Uranium (U)-Dissolved			101.2		%		80-120	07-MAY-19
Vanadium (V)-Dissolved			106.3		%		80-120	07-MAY-19
Zinc (Zn)-Dissolved			107.3		%		80-120	07-MAY-19
<b>WG3042594-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAY-19



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4625640</b>							
<b>WG3042594-1</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4624126</b>							
<b>WG3041997-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			101.3		%		80-120	06-MAY-19
Antimony (Sb)-Total			100.1		%		80-120	06-MAY-19
Arsenic (As)-Total			96.0		%		80-120	06-MAY-19
Barium (Ba)-Total			99.8		%		80-120	06-MAY-19
Bismuth (Bi)-Total			99.9		%		80-120	06-MAY-19
Boron (B)-Total			94.2		%		80-120	06-MAY-19
Cadmium (Cd)-Total			97.5		%		80-120	06-MAY-19
Calcium (Ca)-Total			96.6		%		80-120	06-MAY-19
Chromium (Cr)-Total			96.9		%		80-120	06-MAY-19
Cobalt (Co)-Total			97.5		%		80-120	06-MAY-19
Copper (Cu)-Total			95.3		%		80-120	06-MAY-19
Iron (Fe)-Total			97.8		%		80-120	06-MAY-19
Lead (Pb)-Total			99.0		%		80-120	06-MAY-19
Lithium (Li)-Total			97.3		%		80-120	06-MAY-19
Magnesium (Mg)-Total			102.7		%		80-120	06-MAY-19
Manganese (Mn)-Total			98.2		%		80-120	06-MAY-19
Molybdenum (Mo)-Total			101.5		%		80-120	06-MAY-19
Nickel (Ni)-Total			96.2		%		80-120	06-MAY-19
Potassium (K)-Total			98.6		%		80-120	06-MAY-19
Selenium (Se)-Total			97.6		%		80-120	06-MAY-19
Silicon (Si)-Total			102.3		%		80-120	06-MAY-19
Silver (Ag)-Total			103.7		%		80-120	06-MAY-19



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4624126</b>							
<b>WG3041997-2 LCS</b>								
Sodium (Na)-Total			101.1		%		80-120	06-MAY-19
Strontium (Sr)-Total			101.8		%		80-120	06-MAY-19
Thallium (Tl)-Total			100.7		%		80-120	06-MAY-19
Tin (Sn)-Total			94.9		%		80-120	06-MAY-19
Titanium (Ti)-Total			90.8		%		80-120	06-MAY-19
Uranium (U)-Total			98.2		%		80-120	06-MAY-19
Vanadium (V)-Total			100.8		%		80-120	06-MAY-19
Zinc (Zn)-Total			101.0		%		80-120	06-MAY-19
<b>WG3041997-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	06-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	06-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	06-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	06-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	06-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	06-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	06-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	06-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	06-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	06-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	06-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	06-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	06-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	06-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	06-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	06-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	06-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	06-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	06-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	06-MAY-19



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
<b>Water</b>								
<b>Batch R4624126</b>								
<b>WG3041997-1 MB</b>								
			Tin (Sn)-Total		<0.00010		mg/L	0.0001 06-MAY-19
			Titanium (Ti)-Total		<0.00030		mg/L	0.0003 06-MAY-19
			Uranium (U)-Total		<0.000010		mg/L	0.00001 06-MAY-19
			Vanadium (V)-Total		<0.00050		mg/L	0.0005 06-MAY-19
			Zinc (Zn)-Total		<0.0030		mg/L	0.003 06-MAY-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch R4629249</b>								
<b>WG3045227-26 LCS</b>								
			Ammonia as N		104.7		%	85-115 08-MAY-19
<b>WG3045227-25 MB</b>								
			Ammonia as N		<0.0050		mg/L	0.005 08-MAY-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4620230</b>								
<b>WG3039933-14 LCS</b>								
			Nitrite (as N)		102.5		%	90-110 01-MAY-19
<b>WG3039933-13 MB</b>								
			Nitrite (as N)		<0.0010		mg/L	0.001 01-MAY-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4620230</b>								
<b>WG3039933-14 LCS</b>								
			Nitrate (as N)		99.7		%	90-110 01-MAY-19
<b>WG3039933-13 MB</b>								
			Nitrate (as N)		<0.0050		mg/L	0.005 01-MAY-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch R4627506</b>								
			<b>WG3043754-3 CRM</b>	<b>CL-ORP</b>				
			ORP		220		mV	210-230 07-MAY-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch R4626727</b>								
<b>WG3043782-6 LCS</b>								
			Phosphorus (P)-Total		94.1		%	80-120 07-MAY-19
<b>WG3043782-5 MB</b>								
			Phosphorus (P)-Total		<0.0020		mg/L	0.002 07-MAY-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4625674							
WG3043217-5	LCS							
pH			6.99		pH		6.9-7.1	06-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4621749							
WG3039457-41	LCS							
Orthophosphate-Dissolved (as P)			96.8		%		80-120	02-MAY-19
WG3039457-10	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4620230							
WG3039933-14	LCS							
Sulfate (SO4)			99.2		%		90-110	01-MAY-19
WG3039933-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	01-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4626031							
WG3042237-11	LCS							
Total Dissolved Solids			92.8		%		85-115	06-MAY-19
WG3042237-10	MB							
Total Dissolved Solids			<10		mg/L		10	06-MAY-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4629526							
WG3045806-2	LCS							
Total Kjeldahl Nitrogen			93.6		%		75-125	09-MAY-19
WG3045806-5	LCS							
Total Kjeldahl Nitrogen			93.1		%		75-125	09-MAY-19
WG3045806-9	LCS							
Total Kjeldahl Nitrogen			91.8		%		75-125	09-MAY-19
WG3045806-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAY-19
WG3045806-4	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAY-19
WG3045806-8	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-MAY-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4626033							
<b>WG3042318-6</b>	<b>LCS</b>							
Total Suspended Solids			93.3		%		85-115	06-MAY-19
<b>WG3042318-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	06-MAY-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4621931							
<b>WG3040410-14</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	02-MAY-19
<b>WG3040410-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	02-MAY-19



# Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2265938

Report Date: 12-MAY-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	2	30-APR-19 12:00	07-MAY-19 09:30	0.25	166	hours	EHTR-FM
pH	2	30-APR-19 12:00	06-MAY-19 15:00	0.25	147	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2265938 were received on 01-MAY-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **QTR\_GW\_2019-04-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Krupp			Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equis-GHO-Field@teck.co	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610 013			
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-3048			Phone Number	403 407 1794							

SAMPLE DETAILS							ANALYSIS REQUESTED																
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Y	N	Y	Y	N	N		
 L2265938-COFC																							
GH_MW-RLP-1D_WG_2019-04-01_FB-HG	GH_MW-RLP-1D	WG		2019/04/30		G	1																
GH_MW-RLP-1D_WG_2019-04-01_NP	GH_MW-RLP-1D	WG		2019/04/30		G	8	1	1	1	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Dk</i>	<i>5/1 0900</i>

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name				Mobile #
Sampler's Signature				Date/Time

7 °C



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 24-MAY-19  
Report Date: 03-JUN-19 18:58 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2278772  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2278772-1 GH_GA-MW-2_WG_2019-04-01_NP							
Sampled By: CLIENT on 23-MAY-19 @ 12:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-MAY-19	R4651195
Total Kjeldahl Nitrogen	0.128	TKNI	0.050	mg/L		31-MAY-19	R4652092
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		31-MAY-19	R4652973
Total Organic Carbon	<0.50		0.50	mg/L		29-MAY-19	R4651195
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-MAY-19	28-MAY-19	R4645706
Dissolved Metals Filtration Location	FIELD					26-MAY-19	R4644378
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-MAY-19	29-MAY-19	R4647372
Dissolved Mercury Filtration Location	FIELD					29-MAY-19	R4646871
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					28-MAY-19	R4646099
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-MAY-19	28-MAY-19	R4645706
Antimony (Sb)-Dissolved	0.00194		0.00010	mg/L	26-MAY-19	28-MAY-19	R4645706
Arsenic (As)-Dissolved	0.00025		0.00010	mg/L	26-MAY-19	28-MAY-19	R4645706
Barium (Ba)-Dissolved	0.0475		0.00010	mg/L	26-MAY-19	28-MAY-19	R4645706
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-19	28-MAY-19	R4645706
Boron (B)-Dissolved	0.025		0.010	mg/L	26-MAY-19	28-MAY-19	R4645706
Cadmium (Cd)-Dissolved	<0.060	DLM	0.060	ug/L	26-MAY-19	28-MAY-19	R4645706
Calcium (Ca)-Dissolved	141		0.050	mg/L	26-MAY-19	28-MAY-19	R4645706
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-MAY-19	28-MAY-19	R4645706
Cobalt (Co)-Dissolved	0.46		0.10	ug/L	26-MAY-19	28-MAY-19	R4645706
Copper (Cu)-Dissolved	0.00374		0.00050	mg/L	28-MAY-19	29-MAY-19	R4647947
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-MAY-19	28-MAY-19	R4645706
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-MAY-19	28-MAY-19	R4645706
Lithium (Li)-Dissolved	0.0176		0.0010	mg/L	26-MAY-19	28-MAY-19	R4645706
Magnesium (Mg)-Dissolved	38.8		0.10	mg/L	26-MAY-19	28-MAY-19	R4645706
Manganese (Mn)-Dissolved	0.0881		0.00010	mg/L	26-MAY-19	28-MAY-19	R4645706
Molybdenum (Mo)-Dissolved	0.0559		0.000050	mg/L	26-MAY-19	28-MAY-19	R4645706
Nickel (Ni)-Dissolved	0.00673		0.00050	mg/L	26-MAY-19	28-MAY-19	R4645706
Potassium (K)-Dissolved	1.25		0.050	mg/L	26-MAY-19	28-MAY-19	R4645706
Selenium (Se)-Dissolved	11.1		0.050	ug/L	26-MAY-19	28-MAY-19	R4645706
Silicon (Si)-Dissolved	3.84		0.050	mg/L	26-MAY-19	28-MAY-19	R4645706
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-19	28-MAY-19	R4645706
Sodium (Na)-Dissolved	9.43		0.050	mg/L	26-MAY-19	28-MAY-19	R4645706
Strontium (Sr)-Dissolved	0.596		0.00020	mg/L	26-MAY-19	28-MAY-19	R4645706
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-MAY-19	28-MAY-19	R4645706
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	28-MAY-19	29-MAY-19	R4647947
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-MAY-19	28-MAY-19	R4645706
Uranium (U)-Dissolved	0.00663		0.000010	mg/L	26-MAY-19	28-MAY-19	R4645706
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-MAY-19	28-MAY-19	R4645706
Zinc (Zn)-Dissolved	0.0088		0.0010	mg/L	26-MAY-19	28-MAY-19	R4645706
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	512		0.50	mg/L		29-MAY-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		28-MAY-19	R4646589
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-MAY-19	R4647372
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2278772-1 GH_GA-MW-2_WG_2019-04-01_NP							
Sampled By: CLIENT on 23-MAY-19 @ 12:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0049		0.0030	mg/L		28-MAY-19	R4646589
Antimony (Sb)-Total	0.00195		0.00010	mg/L		28-MAY-19	R4646589
Arsenic (As)-Total	0.00030		0.00010	mg/L		28-MAY-19	R4646589
Barium (Ba)-Total	0.0469		0.00010	mg/L		28-MAY-19	R4646589
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		28-MAY-19	R4646589
Boron (B)-Total	0.022		0.010	mg/L		29-MAY-19	R4646690
Cadmium (Cd)-Total	0.0522		0.0050	ug/L		28-MAY-19	R4646589
Calcium (Ca)-Total	133		0.050	mg/L		28-MAY-19	R4646589
Chromium (Cr)-Total	0.00061		0.00010	mg/L		28-MAY-19	R4646589
Cobalt (Co)-Total	0.77		0.10	ug/L		28-MAY-19	R4646589
Copper (Cu)-Total	0.0307		0.00050	mg/L		28-MAY-19	R4646589
Iron (Fe)-Total	0.011		0.010	mg/L		28-MAY-19	R4646589
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-MAY-19	R4646690
Lithium (Li)-Total	0.0161		0.0010	mg/L		28-MAY-19	R4646589
Magnesium (Mg)-Total	40.9		0.10	mg/L		28-MAY-19	R4646589
Manganese (Mn)-Total	0.115		0.00010	mg/L		28-MAY-19	R4646589
Molybdenum (Mo)-Total	0.0513		0.000050	mg/L		28-MAY-19	R4646589
Nickel (Ni)-Total	0.00759		0.00050	mg/L		28-MAY-19	R4646589
Potassium (K)-Total	1.35		0.050	mg/L		28-MAY-19	R4646589
Selenium (Se)-Total	11.9		0.050	ug/L		28-MAY-19	R4646589
Silicon (Si)-Total	4.07		0.10	mg/L		28-MAY-19	R4646589
Silver (Ag)-Total	0.000016		0.000010	mg/L		28-MAY-19	R4646589
Sodium (Na)-Total	9.55		0.050	mg/L		28-MAY-19	R4646589
Strontium (Sr)-Total	0.548		0.00020	mg/L		28-MAY-19	R4646589
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-MAY-19	R4646690
Tin (Sn)-Total	<0.00010		0.00010	mg/L		28-MAY-19	R4646589
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-MAY-19	R4646589
Uranium (U)-Total	0.00643		0.000010	mg/L		28-MAY-19	R4646589
Vanadium (V)-Total	<0.00050		0.00050	mg/L		28-MAY-19	R4646589
Zinc (Zn)-Total	0.0089		0.0030	mg/L		28-MAY-19	R4646589
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.6		1.0	mg/L		30-MAY-19	R4653065
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	212		1.0	mg/L		31-MAY-19	R4654168
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		31-MAY-19	R4654168
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		31-MAY-19	R4654168
Alkalinity, Total (as CaCO3)	212		1.0	mg/L		31-MAY-19	R4654168
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		01-JUN-19	R4654376
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		24-MAY-19	R4644755
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.3	DLHC	2.5	mg/L		24-MAY-19	R4644755
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	984		2.0	uS/cm		31-MAY-19	R4654168
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.11	DLHC	0.10	mg/L		24-MAY-19	R4644755
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.3			%		03-JUN-19	
Anion Sum	11.6			meq/L		03-JUN-19	
Cation Sum	10.7			meq/L		03-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2278772-1 GH_GA-MW-2_WG_2019-04-01_NP							
Sampled By: CLIENT on 23-MAY-19 @ 12:50							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	91.7		-100	%		03-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	7.23	DLHC	0.025	mg/L		24-MAY-19	R4644755
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.122	DLHC	0.0050	mg/L		24-MAY-19	R4644755
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		24-MAY-19	R4643346
<b>Oxidation redution potential by elect.</b>							
ORP	290		-1000	mV		30-MAY-19	R4653980
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0021		0.0020	mg/L		30-MAY-19	R4651380
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	320	DLHC	1.5	mg/L		24-MAY-19	R4644755
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	640	DLHC	20	mg/L		29-MAY-19	R4651218
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		30-MAY-19	R4652806
<b>Turbidity</b>							
Turbidity	0.34		0.10	NTU		24-MAY-19	R4643908
<b>pH</b>							
pH	8.20		0.10	pH		31-MAY-19	R4654168

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW\_2019-04-01

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653065</b>							
<b>WG3063812-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.0		%		85-115	30-MAY-19
<b>WG3063812-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	30-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654168</b>							
<b>WG3065506-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	31-MAY-19
<b>WG3065506-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4645706</b>							
<b>WG3058913-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	28-MAY-19
<b>WG3058913-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4646589</b>							
<b>WG3059967-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-MAY-19
<b>Batch</b>	<b>R4646690</b>							
<b>WG3059967-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.2		%		80-120	29-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4644755</b>							
<b>WG3059401-10</b>	<b>LCS</b>							
Bromide (Br)			99.2		%		85-115	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651195</b>							
<b>WG3063019-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.8		%		80-120	29-MAY-19
<b>WG3063019-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-MAY-19



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4651195							
<b>WG3063019-2</b>	<b>LCS</b>							
Total Organic Carbon			96.5		%		80-120	31-MAY-19
<b>WG3063019-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4644755							
<b>WG3059401-10</b>	<b>LCS</b>							
Chloride (Cl)			99.2		%		90-110	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4654168							
<b>WG3065506-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.2		%		90-110	31-MAY-19
<b>WG3065506-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4644755							
<b>WG3059401-10</b>	<b>LCS</b>							
Fluoride (F)			102.3		%		90-110	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4647372							
<b>WG3061239-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.1		%		80-120	29-MAY-19
<b>WG3061239-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-MAY-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4647372							
<b>WG3061243-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.9		%		80-120	29-MAY-19
<b>WG3061243-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-MAY-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4652973</b>							
<b>WG3064156-5</b>	<b>DUP</b>	<b>L2278772-1</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	31-MAY-19
<b>WG3064156-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.3		%		80-120	31-MAY-19
<b>WG3064156-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	31-MAY-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4645706</b>							
<b>WG3058913-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.2		%		80-120	28-MAY-19
Antimony (Sb)-Dissolved			101.3		%		80-120	28-MAY-19
Arsenic (As)-Dissolved			100.8		%		80-120	28-MAY-19
Barium (Ba)-Dissolved			104.1		%		80-120	28-MAY-19
Bismuth (Bi)-Dissolved			103.5		%		80-120	28-MAY-19
Boron (B)-Dissolved			94.0		%		80-120	28-MAY-19
Cadmium (Cd)-Dissolved			102.2		%		80-120	28-MAY-19
Calcium (Ca)-Dissolved			100.1		%		80-120	28-MAY-19
Chromium (Cr)-Dissolved			99.7		%		80-120	28-MAY-19
Cobalt (Co)-Dissolved			102.4		%		80-120	28-MAY-19
Iron (Fe)-Dissolved			103.6		%		80-120	28-MAY-19
Lead (Pb)-Dissolved			105.9		%		80-120	28-MAY-19
Lithium (Li)-Dissolved			98.5		%		80-120	28-MAY-19
Magnesium (Mg)-Dissolved			101.1		%		80-120	28-MAY-19
Manganese (Mn)-Dissolved			100.7		%		80-120	28-MAY-19
Molybdenum (Mo)-Dissolved			108.2		%		80-120	28-MAY-19
Nickel (Ni)-Dissolved			99.5		%		80-120	28-MAY-19
Potassium (K)-Dissolved			102.3		%		80-120	28-MAY-19
Selenium (Se)-Dissolved			96.7		%		80-120	28-MAY-19
Silicon (Si)-Dissolved			105.7		%		60-140	28-MAY-19
Silver (Ag)-Dissolved			107.0		%		80-120	28-MAY-19
Sodium (Na)-Dissolved			102.0		%		80-120	28-MAY-19
Strontium (Sr)-Dissolved			106.3		%		80-120	28-MAY-19
Thallium (Tl)-Dissolved			101.9		%		80-120	28-MAY-19
Titanium (Ti)-Dissolved			103.3		%		80-120	28-MAY-19
Uranium (U)-Dissolved			111.1		%		80-120	28-MAY-19
Vanadium (V)-Dissolved			103.5		%		80-120	28-MAY-19



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4645706</b>							
<b>WG3058913-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			98.4		%		80-120	28-MAY-19
<b>WG3058913-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			0.0011	B	mg/L		0.001	28-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-MAY-19
<b>Batch</b>	<b>R4647947</b>							
<b>WG3060835-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.8		%		80-120	29-MAY-19
Antimony (Sb)-Dissolved			94.5		%		80-120	29-MAY-19



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4647947</b>							
<b>WG3060835-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			96.1		%		80-120	29-MAY-19
Barium (Ba)-Dissolved			94.7		%		80-120	29-MAY-19
Bismuth (Bi)-Dissolved			97.0		%		80-120	29-MAY-19
Boron (B)-Dissolved			93.0		%		80-120	29-MAY-19
Cadmium (Cd)-Dissolved			95.9		%		80-120	29-MAY-19
Calcium (Ca)-Dissolved			96.3		%		80-120	29-MAY-19
Chromium (Cr)-Dissolved			99.5		%		80-120	29-MAY-19
Cobalt (Co)-Dissolved			94.8		%		80-120	29-MAY-19
Copper (Cu)-Dissolved			96.9		%		80-120	29-MAY-19
Iron (Fe)-Dissolved			96.1		%		80-120	29-MAY-19
Lead (Pb)-Dissolved			94.5		%		80-120	29-MAY-19
Lithium (Li)-Dissolved			93.3		%		80-120	29-MAY-19
Magnesium (Mg)-Dissolved			97.3		%		80-120	29-MAY-19
Manganese (Mn)-Dissolved			96.2		%		80-120	29-MAY-19
Molybdenum (Mo)-Dissolved			98.3		%		80-120	29-MAY-19
Nickel (Ni)-Dissolved			97.2		%		80-120	29-MAY-19
Potassium (K)-Dissolved			104.3		%		80-120	29-MAY-19
Selenium (Se)-Dissolved			97.3		%		80-120	29-MAY-19
Silicon (Si)-Dissolved			89.5		%		60-140	29-MAY-19
Silver (Ag)-Dissolved			101.7		%		80-120	29-MAY-19
Sodium (Na)-Dissolved			100.1		%		80-120	29-MAY-19
Strontium (Sr)-Dissolved			100.7		%		80-120	29-MAY-19
Thallium (Tl)-Dissolved			96.1		%		80-120	29-MAY-19
Tin (Sn)-Dissolved			98.4		%		80-120	29-MAY-19
Titanium (Ti)-Dissolved			94.9		%		80-120	29-MAY-19
Uranium (U)-Dissolved			95.4		%		80-120	29-MAY-19
Vanadium (V)-Dissolved			97.9		%		80-120	29-MAY-19
Zinc (Zn)-Dissolved			95.1		%		80-120	29-MAY-19
<b>WG3060835-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-MAY-19



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4647947</b>							
<b>WG3060835-1</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4646589</b>							
<b>WG3059967-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	28-MAY-19





## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4646589</b>							
<b>WG3059967-1</b>	<b>MB</b>							
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-MAY-19
<b>Batch</b>	<b>R4646690</b>							
<b>WG3059967-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			106.5		%		80-120	29-MAY-19
Antimony (Sb)-Total			103.7		%		80-120	29-MAY-19
Arsenic (As)-Total			104.4		%		80-120	29-MAY-19
Barium (Ba)-Total			105.0		%		80-120	29-MAY-19
Bismuth (Bi)-Total			99.3		%		80-120	29-MAY-19
Boron (B)-Total			98.8		%		80-120	29-MAY-19
Cadmium (Cd)-Total			104.9		%		80-120	29-MAY-19
Calcium (Ca)-Total			94.6		%		80-120	29-MAY-19



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4646690</b>							
<b>WG3059967-2</b>	<b>LCS</b>							
Chromium (Cr)-Total			103.3		%		80-120	29-MAY-19
Cobalt (Co)-Total			104.4		%		80-120	29-MAY-19
Copper (Cu)-Total			102.3		%		80-120	29-MAY-19
Iron (Fe)-Total			101.7		%		80-120	29-MAY-19
Lead (Pb)-Total			99.7		%		80-120	29-MAY-19
Lithium (Li)-Total			95.8		%		80-120	29-MAY-19
Magnesium (Mg)-Total			101.0		%		80-120	29-MAY-19
Manganese (Mn)-Total			102.9		%		80-120	29-MAY-19
Molybdenum (Mo)-Total			104.4		%		80-120	29-MAY-19
Nickel (Ni)-Total			103.7		%		80-120	29-MAY-19
Potassium (K)-Total			107.6		%		80-120	29-MAY-19
Selenium (Se)-Total			101.6		%		80-120	29-MAY-19
Silicon (Si)-Total			102.4		%		80-120	29-MAY-19
Silver (Ag)-Total			100.2		%		80-120	29-MAY-19
Sodium (Na)-Total			109.1		%		80-120	29-MAY-19
Strontium (Sr)-Total			97.3		%		80-120	29-MAY-19
Thallium (Tl)-Total			98.8		%		80-120	29-MAY-19
Tin (Sn)-Total			98.5		%		80-120	29-MAY-19
Titanium (Ti)-Total			100.4		%		80-120	29-MAY-19
Uranium (U)-Total			96.0		%		80-120	29-MAY-19
Vanadium (V)-Total			106.0		%		80-120	29-MAY-19
Zinc (Zn)-Total			103.3		%		80-120	29-MAY-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4654376</b>							
<b>WG3065673-2</b>	<b>LCS</b>							
Ammonia as N			94.8		%		85-115	01-JUN-19
<b>WG3065673-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4644755</b>							
<b>WG3059401-10</b>	<b>LCS</b>							
Nitrite (as N)			102.1		%		90-110	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-MAY-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4644755							
<b>WG3059401-10</b>	<b>LCS</b>							
Nitrate (as N)			99.4		%		90-110	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4653980							
<b>WG3063244-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	30-MAY-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4651380							
<b>WG3063247-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.6		%		80-120	30-MAY-19
<b>WG3063247-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4643346							
<b>WG3057792-42</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.0		%		80-120	24-MAY-19
<b>WG3057792-41</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4644755							
<b>WG3059401-10</b>	<b>LCS</b>							
Sulfate (SO4)			99.7		%		90-110	24-MAY-19
<b>WG3059401-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4651218							
<b>WG3061435-5</b>	<b>LCS</b>							
Total Dissolved Solids			92.0		%		85-115	29-MAY-19
<b>WG3061435-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-MAY-19
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch R4652092</b>								
<b>WG3063917-2 LCS</b>								
Total Kjeldahl Nitrogen			100.5		%		75-125	31-MAY-19
<b>WG3063917-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-MAY-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch R4652806</b>								
<b>WG3063292-4 LCS</b>								
Total Suspended Solids			96.6		%		85-115	30-MAY-19
<b>WG3063292-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	30-MAY-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch R4643908</b>								
<b>WG3058386-12 DUP</b>								
Turbidity		<b>L2278772-1</b> 0.34	0.35		NTU	2.9	15	24-MAY-19
<b>WG3058386-11 LCS</b>								
Turbidity			101.5		%		85-115	24-MAY-19
<b>WG3058386-10 MB</b>								
Turbidity			<0.10		NTU		0.1	24-MAY-19

# Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2278772

Report Date: 03-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	23-MAY-19 12:50	30-MAY-19 10:00	0.25	165	hours	EHTR-FM
pH	1	23-MAY-19 12:50	31-MAY-19 09:00	0.25	188	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2278772 were received on 24-MAY-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>	<b>QTR_GW_2019-04-01</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>						
PROJECT/CLIENT INFO		LABORATORY			OTHER INFO					
Facility Name / Job#	Greenhills Operation	Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp	Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com	X	X	X
Email	jennifer.kropp@teck.com	Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equis-GHO-Field@teck.co	X	X	X
Address	P.O. BOX 5000	Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013	
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	250-865-3048	Phone Number	403 407 1794							

**SAMPLE DETAILS** Filtered: F: Field, L: Lab, P: Field & Lab, N: None



L2278772-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA					
GII_GA-MW-2_WG_2019-04-01_NP	GH_GA-MW-2	WG		2019/05/23	12:50	G	8	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/24 4:00

<b>SERVICE REQUEST (rush - subject to availability)</b>		Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

202



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 28-MAY-19  
Report Date: 06-JUN-19 14:23 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2280670  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2280670-1 GH_MW-TD_WG_2019-04-01_NP							
Sampled By: J. FRANCIS on 27-MAY-19 @ 12:25							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.53		0.50	mg/L		31-MAY-19	R4653386
Total Kjeldahl Nitrogen	0.071		0.050	mg/L		05-JUN-19	R4659365
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		06-JUN-19	R4660065
Total Organic Carbon	0.60		0.50	mg/L		31-MAY-19	R4653386
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-MAY-19	31-MAY-19	R4653601
Dissolved Metals Filtration Location	FIELD					31-MAY-19	R4652951
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-MAY-19	01-JUN-19	R4653301
Dissolved Mercury Filtration Location	FIELD					30-MAY-19	R4651538
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-MAY-19	R4652951
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-MAY-19	31-MAY-19	R4653601
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Barium (Ba)-Dissolved	0.0223		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-MAY-19	31-MAY-19	R4653601
Boron (B)-Dissolved	0.353		0.010	mg/L	31-MAY-19	31-MAY-19	R4653601
Cadmium (Cd)-Dissolved	0.488		0.0050	ug/L	31-MAY-19	31-MAY-19	R4653601
Calcium (Ca)-Dissolved	88.7		0.050	mg/L	31-MAY-19	31-MAY-19	R4653601
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Cobalt (Co)-Dissolved	0.42		0.10	ug/L	31-MAY-19	31-MAY-19	R4653601
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-MAY-19	31-MAY-19	R4653601
Iron (Fe)-Dissolved	0.887		0.010	mg/L	31-MAY-19	31-MAY-19	R4653601
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-MAY-19	31-MAY-19	R4653601
Lithium (Li)-Dissolved	0.0390		0.0010	mg/L	31-MAY-19	31-MAY-19	R4653601
Magnesium (Mg)-Dissolved	35.4		0.10	mg/L	31-MAY-19	31-MAY-19	R4653601
Manganese (Mn)-Dissolved	0.712		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Molybdenum (Mo)-Dissolved	0.00288		0.000050	mg/L	31-MAY-19	31-MAY-19	R4653601
Nickel (Ni)-Dissolved	0.00093		0.00050	mg/L	31-MAY-19	31-MAY-19	R4653601
Potassium (K)-Dissolved	2.42		0.050	mg/L	31-MAY-19	31-MAY-19	R4653601
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-MAY-19	31-MAY-19	R4653601
Silicon (Si)-Dissolved	6.56		0.050	mg/L	31-MAY-19	31-MAY-19	R4653601
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-MAY-19	31-MAY-19	R4653601
Sodium (Na)-Dissolved	28.5		0.050	mg/L	31-MAY-19	31-MAY-19	R4653601
Strontium (Sr)-Dissolved	1.15		0.00020	mg/L	31-MAY-19	31-MAY-19	R4653601
Thallium (Tl)-Dissolved	0.000160		0.000010	mg/L	31-MAY-19	31-MAY-19	R4653601
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-MAY-19	31-MAY-19	R4653601
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-MAY-19	31-MAY-19	R4653601
Uranium (U)-Dissolved	0.00101		0.000010	mg/L	31-MAY-19	31-MAY-19	R4653601
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-MAY-19	31-MAY-19	R4653601
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	31-MAY-19	31-MAY-19	R4653601
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	367		0.50	mg/L		03-JUN-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-MAY-19	R4653185
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		02-JUN-19	R4653713
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2280670-1 GH_MW-TD_WG_2019-04-01_NP							
Sampled By: J. FRANCIS on 27-MAY-19 @ 12:25							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0043		0.0030	mg/L		31-MAY-19	R4653185
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-MAY-19	R4653185
Arsenic (As)-Total	0.00014		0.00010	mg/L		31-MAY-19	R4653185
Barium (Ba)-Total	0.0235		0.00010	mg/L		31-MAY-19	R4653185
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-MAY-19	R4653185
Boron (B)-Total	0.357		0.010	mg/L		31-MAY-19	R4653185
Cadmium (Cd)-Total	0.529		0.0050	ug/L		31-MAY-19	R4653185
Calcium (Ca)-Total	86.8		0.050	mg/L		31-MAY-19	R4653185
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		31-MAY-19	R4653185
Cobalt (Co)-Total	0.46		0.10	ug/L		31-MAY-19	R4653185
Copper (Cu)-Total	<0.00050		0.00050	mg/L		31-MAY-19	R4653185
Iron (Fe)-Total	0.906		0.010	mg/L		31-MAY-19	R4653185
Lead (Pb)-Total	<0.000050		0.000050	mg/L		31-MAY-19	R4653185
Lithium (Li)-Total	0.0401		0.0010	mg/L		31-MAY-19	R4653185
Magnesium (Mg)-Total	34.8		0.10	mg/L		31-MAY-19	R4653185
Manganese (Mn)-Total	0.726		0.00010	mg/L		31-MAY-19	R4653185
Molybdenum (Mo)-Total	0.00296		0.000050	mg/L		31-MAY-19	R4653185
Nickel (Ni)-Total	0.00096		0.00050	mg/L		31-MAY-19	R4653185
Potassium (K)-Total	2.33		0.050	mg/L		31-MAY-19	R4653185
Selenium (Se)-Total	<0.050		0.050	ug/L		31-MAY-19	R4653185
Silicon (Si)-Total	6.62		0.10	mg/L		31-MAY-19	R4653185
Silver (Ag)-Total	<0.000010		0.000010	mg/L		31-MAY-19	R4653185
Sodium (Na)-Total	28.4		0.050	mg/L		31-MAY-19	R4653185
Strontium (Sr)-Total	1.14		0.00020	mg/L		31-MAY-19	R4653185
Thallium (Tl)-Total	0.000176		0.000010	mg/L		31-MAY-19	R4653185
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-MAY-19	R4653185
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-MAY-19	R4653185
Uranium (U)-Total	0.00112		0.000010	mg/L		31-MAY-19	R4653185
Vanadium (V)-Total	<0.00050		0.00050	mg/L		31-MAY-19	R4653185
Zinc (Zn)-Total	0.0046		0.0030	mg/L		31-MAY-19	R4653185
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.8		1.0	mg/L		03-JUN-19	R4656522
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	341		1.0	mg/L		04-JUN-19	R4659158
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-JUN-19	R4659158
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-JUN-19	R4659158
Alkalinity, Total (as CaCO3)	341		1.0	mg/L		04-JUN-19	R4659158
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0826		0.0050	mg/L		04-JUN-19	R4659385
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		29-MAY-19	R4650451
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		29-MAY-19	R4650451
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	782		2.0	uS/cm		04-JUN-19	R4659158
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.277		0.020	mg/L		29-MAY-19	R4650451
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.5			%		05-JUN-19	
Anion Sum	8.63			meq/L		05-JUN-19	
Cation Sum	8.71			meq/L		05-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2280670-1 GH_MW-TD_WG_2019-04-01_NP							
Sampled By: J. FRANCIS on 27-MAY-19 @ 12:25							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		05-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		29-MAY-19	R4650451
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-MAY-19	R4650451
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		29-MAY-19	R4651439
<b>Oxidation redution potential by elect.</b>							
ORP	344		-1000	mV		03-JUN-19	R4655009
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-JUN-19	R4654431
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	86.7		0.30	mg/L		29-MAY-19	R4650451
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	423	DLHC	20	mg/L		01-JUN-19	R4654421
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-JUN-19	R4655806
<b>Turbidity</b>							
Turbidity	11.7		0.10	NTU		30-MAY-19	R4652366
<b>pH</b>							
pH	8.16		0.10	pH		04-JUN-19	R4659158

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

QTR\_GW\_2019-04-01

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 1 of 10

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4656522</b>							
<b>WG3066693-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.6		%		85-115	03-JUN-19
<b>WG3066693-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	03-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659158</b>							
<b>WG3067958-9</b>	<b>DUP</b>	<b>L2280670-1</b>						
Alkalinity, Total (as CaCO3)		341	333		mg/L	2.3	20	04-JUN-19
<b>WG3067958-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			94.9		%		85-115	04-JUN-19
<b>WG3067958-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064151-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.8		%		80-120	31-MAY-19
<b>WG3064151-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			95.1		%		80-120	31-MAY-19
<b>WG3063362-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4650451</b>							
<b>WG3062671-2</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653386</b>							
<b>WG3064905-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.7		%		80-120	01-JUN-19
<b>WG3064905-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653386							
<b>WG3064905-6</b>	<b>LCS</b>							
Total Organic Carbon			93.4		%		80-120	31-MAY-19
<b>WG3064905-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	29-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4659158							
<b>WG3067958-9</b>	<b>DUP</b>	<b>L2280670-1</b>						
Conductivity (@ 25C)		782	751		uS/cm	4.0	10	04-JUN-19
<b>WG3067958-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.0		%		90-110	04-JUN-19
<b>WG3067958-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Fluoride (F)			104.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4653301							
<b>WG3063459-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.1		%		80-120	01-JUN-19
<b>WG3063459-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4653713							
<b>WG3065236-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.7		%		80-120	02-JUN-19
<b>WG3065236-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-JUN-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4660065</b>							
<b>WG3069534-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.9		%		80-120	06-JUN-19
<b>WG3069534-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	06-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064151-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.1		%		80-120	31-MAY-19
Antimony (Sb)-Dissolved			97.1		%		80-120	31-MAY-19
Arsenic (As)-Dissolved			95.6		%		80-120	31-MAY-19
Barium (Ba)-Dissolved			95.7		%		80-120	31-MAY-19
Bismuth (Bi)-Dissolved			99.2		%		80-120	31-MAY-19
Boron (B)-Dissolved			96.0		%		80-120	31-MAY-19
Cadmium (Cd)-Dissolved			95.7		%		80-120	31-MAY-19
Calcium (Ca)-Dissolved			95.1		%		80-120	31-MAY-19
Chromium (Cr)-Dissolved			97.5		%		80-120	31-MAY-19
Cobalt (Co)-Dissolved			96.3		%		80-120	31-MAY-19
Copper (Cu)-Dissolved			95.6		%		80-120	31-MAY-19
Iron (Fe)-Dissolved			93.5		%		80-120	31-MAY-19
Lead (Pb)-Dissolved			97.2		%		80-120	31-MAY-19
Lithium (Li)-Dissolved			93.5		%		80-120	31-MAY-19
Magnesium (Mg)-Dissolved			94.9		%		80-120	31-MAY-19
Manganese (Mn)-Dissolved			95.5		%		80-120	31-MAY-19
Molybdenum (Mo)-Dissolved			103.5		%		80-120	31-MAY-19
Nickel (Ni)-Dissolved			96.4		%		80-120	31-MAY-19
Potassium (K)-Dissolved			98.3		%		80-120	31-MAY-19
Selenium (Se)-Dissolved			98.8		%		80-120	31-MAY-19
Silicon (Si)-Dissolved			102.7		%		60-140	31-MAY-19
Silver (Ag)-Dissolved			101.9		%		80-120	31-MAY-19
Sodium (Na)-Dissolved			97.7		%		80-120	31-MAY-19
Strontium (Sr)-Dissolved			97.8		%		80-120	31-MAY-19
Thallium (Tl)-Dissolved			96.4		%		80-120	31-MAY-19
Tin (Sn)-Dissolved			97.1		%		80-120	31-MAY-19
Titanium (Ti)-Dissolved			97.5		%		80-120	31-MAY-19
Uranium (U)-Dissolved			97.2		%		80-120	31-MAY-19



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064151-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			95.7		%		80-120	31-MAY-19
Zinc (Zn)-Dissolved			95.5		%		80-120	31-MAY-19
<b>WG3064151-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.9		%		80-120	31-MAY-19
Antimony (Sb)-Total			113.0		%		80-120	31-MAY-19
Arsenic (As)-Total			102.9		%		80-120	31-MAY-19
Barium (Ba)-Total			108.6		%		80-120	31-MAY-19
Bismuth (Bi)-Total			107.8		%		80-120	31-MAY-19
Boron (B)-Total			93.2		%		80-120	31-MAY-19
Cadmium (Cd)-Total			104.2		%		80-120	31-MAY-19
Calcium (Ca)-Total			98.0		%		80-120	31-MAY-19
Chromium (Cr)-Total			103.0		%		80-120	31-MAY-19
Cobalt (Co)-Total			103.9		%		80-120	31-MAY-19
Copper (Cu)-Total			102.2		%		80-120	31-MAY-19
Iron (Fe)-Total			95.4		%		80-120	31-MAY-19
Lead (Pb)-Total			105.8		%		80-120	31-MAY-19
Lithium (Li)-Total			94.1		%		80-120	31-MAY-19
Magnesium (Mg)-Total			102.7		%		80-120	31-MAY-19
Manganese (Mn)-Total			103.5		%		80-120	31-MAY-19
Molybdenum (Mo)-Total			102.3		%		80-120	31-MAY-19
Nickel (Ni)-Total			103.8		%		80-120	31-MAY-19
Potassium (K)-Total			102.6		%		80-120	31-MAY-19
Selenium (Se)-Total			99.9		%		80-120	31-MAY-19
Silicon (Si)-Total			107.1		%		80-120	31-MAY-19
Silver (Ag)-Total			102.8		%		80-120	31-MAY-19
Sodium (Na)-Total			106.3		%		80-120	31-MAY-19
Strontium (Sr)-Total			97.9		%		80-120	31-MAY-19
Thallium (Tl)-Total			108.2		%		80-120	31-MAY-19
Tin (Sn)-Total			99.7		%		80-120	31-MAY-19
Titanium (Ti)-Total			104.1		%		80-120	31-MAY-19
Uranium (U)-Total			105.5		%		80-120	31-MAY-19
Vanadium (V)-Total			103.2		%		80-120	31-MAY-19
Zinc (Zn)-Total			105.0		%		80-120	31-MAY-19
<b>WG3063362-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-MAY-19



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-MAY-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4650451</b>							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrite (as N)			102.8		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAY-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4655009							
<b>WG3066587-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	03-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4654431							
<b>WG3066188-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.9		%		80-120	03-JUN-19
<b>WG3066188-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4659158							
<b>WG3067958-9</b>	<b>DUP</b>	<b>L2280670-1</b>						
pH		8.16	8.19	J	pH	0.03	0.2	04-JUN-19
<b>WG3067958-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	04-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4651439							
<b>WG3062056-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.4		%		80-120	29-MAY-19
<b>WG3062056-21</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4654421							
<b>WG3064813-14</b>	<b>LCS</b>							
Total Dissolved Solids			96.6		%		85-115	01-JUN-19
<b>WG3064813-13</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-JUN-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4659365							
<b>WG3068573-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.4		%		75-125	05-JUN-19
<b>WG3068573-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.5		%		75-125	05-JUN-19
<b>WG3068573-17</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.1		%		75-125	05-JUN-19
<b>WG3068573-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.1		%		75-125	05-JUN-19
<b>WG3068573-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.7		%		75-125	05-JUN-19
<b>WG3068573-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-19
<b>WG3068573-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-19
<b>WG3068573-16</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-19
<b>WG3068573-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-19
<b>WG3068573-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4655806							
<b>WG3066198-5</b>	<b>LCS</b>							
Total Suspended Solids			104.0		%		85-115	03-JUN-19
<b>WG3066198-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4652366							
<b>WG3063857-8</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	30-MAY-19
<b>WG3063857-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-MAY-19

# Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2280670

Report Date: 06-JUN-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-MAY-19 12:25	03-JUN-19 14:30	0.25	170	hours	EHTR-FM
pH	1	27-MAY-19 12:25	04-JUN-19 13:00	0.25	192	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2280670 were received on 28-MAY-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **QTR\_GW\_2019-04-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com		X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL_Equus-GHO-Field@teck.co		X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com				X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013				
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	250-865-3048			Phone Number	403 407 1794								

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PREPARED	Y	N	Y		Y	N	N							
GH_MW-TD_WG_2019-04-01_NP	GH_MW-TD	WG		2019/05/27	12:25	G	8		H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3							
									ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA						
									1	1	1	1	1	1	1	1						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	J. Francis			5/28 9:15

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	X	J. Francis	
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

FC



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 30-MAY-19  
Report Date: 14-JUN-19 18:19 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2282582  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-1 GH_GA-MW-3_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 11:55							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.81		0.50	mg/L		04-JUN-19	R4659151
Total Kjeldahl Nitrogen	<0.50	DLM	0.50	mg/L		06-JUN-19	R4660411
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		06-JUN-19	R4660522
Total Organic Carbon	0.64		0.50	mg/L		04-JUN-19	R4659151
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-JUN-19	12-JUN-19	R4666787
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-JUN-19	14-JUN-19	R4669942
Dissolved Mercury Filtration Location	FIELD					14-JUN-19	R4670439
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-JUN-19	12-JUN-19	R4666787
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Barium (Ba)-Dissolved	0.0885		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Boron (B)-Dissolved	0.239		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	12-JUN-19	12-JUN-19	R4666787
Calcium (Ca)-Dissolved	55.3		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-JUN-19	12-JUN-19	R4666787
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Lithium (Li)-Dissolved	0.0847		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
Magnesium (Mg)-Dissolved	36.3		0.10	mg/L	12-JUN-19	12-JUN-19	R4666787
Manganese (Mn)-Dissolved	0.00752		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Potassium (K)-Dissolved	2.35		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Selenium (Se)-Dissolved	9.26		0.050	ug/L	12-JUN-19	12-JUN-19	R4666787
Silicon (Si)-Dissolved	4.78		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Sodium (Na)-Dissolved	34.7		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Strontium (Sr)-Dissolved	2.10		0.00020	mg/L	12-JUN-19	12-JUN-19	R4666787
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Uranium (U)-Dissolved	0.000201		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
<b>Hardness</b>							
Hardness (as CaCO3)	288		0.50	mg/L		12-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-19	R4655992
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-1 GH_GA-MW-3_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 11:55							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0173		0.0030	mg/L		04-JUN-19	R4655992
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Arsenic (As)-Total	0.00018		0.00010	mg/L		04-JUN-19	R4655992
Barium (Ba)-Total	0.0878		0.00010	mg/L		04-JUN-19	R4655992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Boron (B)-Total	0.252		0.010	mg/L		04-JUN-19	R4655992
Cadmium (Cd)-Total	0.0080		0.0050	ug/L		04-JUN-19	R4655992
Calcium (Ca)-Total	59.0		0.050	mg/L		04-JUN-19	R4655992
Chromium (Cr)-Total	0.00016		0.00010	mg/L		04-JUN-19	R4655992
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-19	R4655992
Copper (Cu)-Total	0.00051		0.00050	mg/L		04-JUN-19	R4655992
Iron (Fe)-Total	0.091		0.010	mg/L		04-JUN-19	R4655992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Lithium (Li)-Total	0.0921		0.0010	mg/L		04-JUN-19	R4655992
Magnesium (Mg)-Total	37.2		0.10	mg/L		04-JUN-19	R4655992
Manganese (Mn)-Total	0.00807		0.00010	mg/L		04-JUN-19	R4655992
Molybdenum (Mo)-Total	0.000050		0.000050	mg/L		04-JUN-19	R4655992
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Potassium (K)-Total	2.41		0.050	mg/L		04-JUN-19	R4655992
Selenium (Se)-Total	7.82		0.050	ug/L		04-JUN-19	R4655992
Silicon (Si)-Total	5.25		0.10	mg/L		04-JUN-19	R4655992
Silver (Ag)-Total	0.000088		0.000010	mg/L		04-JUN-19	R4655992
Sodium (Na)-Total	34.1		0.050	mg/L		04-JUN-19	R4655992
Strontium (Sr)-Total	2.01		0.00020	mg/L		04-JUN-19	R4655992
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Uranium (U)-Total	0.000213		0.000010	mg/L		04-JUN-19	R4655992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-19	R4655992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.9		1.0	mg/L		07-JUN-19	R4661595
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	242		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Carbonate (as CaCO3)	7.2		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Total (as CaCO3)	249		1.0	mg/L		06-JUN-19	R4661465
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.379	DLHC	0.050	mg/L		06-JUN-19	R4661390
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-19	R4654463
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.83		0.50	mg/L		31-MAY-19	R4654463
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	733		2.0	uS/cm		06-JUN-19	R4661465
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.656		0.020	mg/L		31-MAY-19	R4654463
<b>Ion Balance Calculation</b>							
Ion Balance	98.4		-100	%		13-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.8			%		12-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-1 GH_GA-MW-3_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 11:55							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	7.46			meq/L		12-JUN-19	
Cation Sum	7.35			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0196		0.0050	mg/L		31-MAY-19	R4654463
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.411		0.0010	mg/L		31-MAY-19	R4654463
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		31-MAY-19	R4653118
<b>Oxidation redution potential by elect.</b>							
ORP	390		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0079		0.0020	mg/L		05-JUN-19	R4659516
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	106		0.30	mg/L		31-MAY-19	R4654463
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	407	DLHC	20	mg/L		04-JUN-19	R4659889
<b>Total Suspended Solids</b>							
Total Suspended Solids	19.8		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	40.0		0.10	NTU		31-MAY-19	R4653349
<b>pH</b>							
pH	8.39		0.10	pH		06-JUN-19	R4661465
L2282582-2 GH_MW-ERSC-1_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 13:30							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.33		0.50	mg/L		04-JUN-19	R4659151
Total Kjeldahl Nitrogen	0.478		0.050	mg/L		06-JUN-19	R4660411
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		06-JUN-19	R4660522
Total Organic Carbon	1.21		0.50	mg/L		04-JUN-19	R4659151
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-JUN-19	12-JUN-19	R4666787
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-JUN-19	14-JUN-19	R4669942
Dissolved Mercury Filtration Location	FIELD					14-JUN-19	R4670439
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-JUN-19	12-JUN-19	R4666787
Antimony (Sb)-Dissolved	0.00011		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Barium (Ba)-Dissolved	0.106		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Boron (B)-Dissolved	0.012		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cadmium (Cd)-Dissolved	0.0285		0.0050	ug/L	12-JUN-19	12-JUN-19	R4666787
Calcium (Ca)-Dissolved	76.8		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-JUN-19	12-JUN-19	R4666787
Copper (Cu)-Dissolved	0.00533		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-2 GH_MW-ERSC-1_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 13:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Lithium (Li)-Dissolved	0.0091		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
Magnesium (Mg)-Dissolved	31.8		0.10	mg/L	12-JUN-19	12-JUN-19	R4666787
Manganese (Mn)-Dissolved	0.00132		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Molybdenum (Mo)-Dissolved	0.00195		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Nickel (Ni)-Dissolved	0.00073		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Potassium (K)-Dissolved	0.794		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Selenium (Se)-Dissolved	16.6		0.050	ug/L	12-JUN-19	12-JUN-19	R4666787
Silicon (Si)-Dissolved	2.90		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Sodium (Na)-Dissolved	3.93		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Strontium (Sr)-Dissolved	0.253		0.00020	mg/L	12-JUN-19	12-JUN-19	R4666787
Thallium (Tl)-Dissolved	0.000019		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Uranium (U)-Dissolved	0.00106		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Zinc (Zn)-Dissolved	0.0016		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
<b>Hardness</b>							
Hardness (as CaCO3)	323		0.50	mg/L		12-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-19	R4655992
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0033		0.0030	mg/L		04-JUN-19	R4655992
Antimony (Sb)-Total	0.00015		0.00010	mg/L		04-JUN-19	R4655992
Arsenic (As)-Total	0.00012		0.00010	mg/L		04-JUN-19	R4655992
Barium (Ba)-Total	0.107		0.00010	mg/L		04-JUN-19	R4655992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Boron (B)-Total	0.012		0.010	mg/L		04-JUN-19	R4655992
Cadmium (Cd)-Total	0.0348		0.0050	ug/L		04-JUN-19	R4655992
Calcium (Ca)-Total	88.3		0.050	mg/L		04-JUN-19	R4655992
Chromium (Cr)-Total	0.00026		0.00010	mg/L		04-JUN-19	R4655992
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-19	R4655992
Copper (Cu)-Total	0.00675		0.00050	mg/L		04-JUN-19	R4655992
Iron (Fe)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Lithium (Li)-Total	0.0104		0.0010	mg/L		04-JUN-19	R4655992
Magnesium (Mg)-Total	33.2		0.10	mg/L		04-JUN-19	R4655992
Manganese (Mn)-Total	0.00148		0.00010	mg/L		04-JUN-19	R4655992
Molybdenum (Mo)-Total	0.00199		0.000050	mg/L		04-JUN-19	R4655992
Nickel (Ni)-Total	0.00081		0.00050	mg/L		04-JUN-19	R4655992
Potassium (K)-Total	0.866		0.050	mg/L		04-JUN-19	R4655992
Selenium (Se)-Total	17.2		0.050	ug/L		04-JUN-19	R4655992
Silicon (Si)-Total	3.32		0.10	mg/L		04-JUN-19	R4655992
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Sodium (Na)-Total	4.04		0.050	mg/L		04-JUN-19	R4655992
Strontium (Sr)-Total	0.259		0.00020	mg/L		04-JUN-19	R4655992
Thallium (Tl)-Total	0.000018		0.000010	mg/L		04-JUN-19	R4655992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-2 GH_MW-ERSC-1_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 13:30							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Uranium (U)-Total	0.00108		0.000010	mg/L		04-JUN-19	R4655992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Zinc (Zn)-Total	0.0042		0.0030	mg/L		04-JUN-19	R4655992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.1		1.0	mg/L		07-JUN-19	R4661595
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	189		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Carbonate (as CaCO3)	8.2		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Total (as CaCO3)	197		1.0	mg/L		06-JUN-19	R4661465
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0099		0.0050	mg/L		06-JUN-19	R4661390
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-19	R4654463
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.47		0.50	mg/L		31-MAY-19	R4654463
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	646		2.0	uS/cm		06-JUN-19	R4661465
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.123		0.020	mg/L		31-MAY-19	R4654463
<b>Ion Balance Calculation</b>							
Ion Balance	92.8		-100	%		13-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.7			%		12-JUN-19	
Anion Sum	7.16			meq/L		12-JUN-19	
Cation Sum	6.64			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	3.19		0.0050	mg/L		31-MAY-19	R4654463
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0010		0.0010	mg/L		31-MAY-19	R4654463
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		31-MAY-19	R4653118
<b>Oxidation redution potential by elect.</b>							
ORP	418		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		05-JUN-19	R4659516
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	139		0.30	mg/L		31-MAY-19	R4654463
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	392	DLHC	20	mg/L		04-JUN-19	R4659889
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.0		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	0.68		0.10	NTU		31-MAY-19	R4653349
<b>pH</b>							
pH	8.44		0.10	pH		06-JUN-19	R4661465
L2282582-3 GH_GWD2_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 12:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-3 GH_GWD2_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 12:00							
Matrix: WG							
Dissolved Organic Carbon	1.23		0.50	mg/L		04-JUN-19	R4659151
Total Kjeldahl Nitrogen	0.286	TKNI	0.050	mg/L		06-JUN-19	R4660411
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		06-JUN-19	R4660522
Total Organic Carbon	1.19		0.50	mg/L		04-JUN-19	R4659151
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-JUN-19	12-JUN-19	R4666787
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	14-JUN-19	14-JUN-19	R4669942
Dissolved Mercury Filtration Location	FIELD					14-JUN-19	R4670439
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-JUN-19	12-JUN-19	R4666787
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Barium (Ba)-Dissolved	0.104		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Boron (B)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cadmium (Cd)-Dissolved	0.0344		0.0050	ug/L	12-JUN-19	12-JUN-19	R4666787
Calcium (Ca)-Dissolved	77.9		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Chromium (Cr)-Dissolved	0.00029		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-JUN-19	12-JUN-19	R4666787
Copper (Cu)-Dissolved	0.00605		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Lithium (Li)-Dissolved	0.0094		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
Magnesium (Mg)-Dissolved	31.6		0.10	mg/L	12-JUN-19	12-JUN-19	R4666787
Manganese (Mn)-Dissolved	0.00124		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Molybdenum (Mo)-Dissolved	0.00200		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Nickel (Ni)-Dissolved	0.00075		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Potassium (K)-Dissolved	0.795		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Selenium (Se)-Dissolved	16.2		0.050	ug/L	12-JUN-19	12-JUN-19	R4666787
Silicon (Si)-Dissolved	2.91		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Sodium (Na)-Dissolved	4.00		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Strontium (Sr)-Dissolved	0.270		0.00020	mg/L	12-JUN-19	12-JUN-19	R4666787
Thallium (Tl)-Dissolved	0.000017		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Uranium (U)-Dissolved	0.00111		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
<b>Hardness</b>							
Hardness (as CaCO3)	325		0.50	mg/L		12-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-19	R4655992
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0108		0.0030	mg/L		04-JUN-19	R4655992

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-3 GH_GWD2_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Antimony (Sb)-Total	0.00015		0.00010	mg/L		04-JUN-19	R4655992
Arsenic (As)-Total	0.00012		0.00010	mg/L		04-JUN-19	R4655992
Barium (Ba)-Total	0.103		0.00010	mg/L		04-JUN-19	R4655992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Boron (B)-Total	0.011		0.010	mg/L		04-JUN-19	R4655992
Cadmium (Cd)-Total	0.0312		0.0050	ug/L		04-JUN-19	R4655992
Calcium (Ca)-Total	85.8		0.050	mg/L		04-JUN-19	R4655992
Chromium (Cr)-Total	0.00027		0.00010	mg/L		04-JUN-19	R4655992
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-19	R4655992
Copper (Cu)-Total	0.00688		0.00050	mg/L		04-JUN-19	R4655992
Iron (Fe)-Total	0.018		0.010	mg/L		04-JUN-19	R4655992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Lithium (Li)-Total	0.0105		0.0010	mg/L		04-JUN-19	R4655992
Magnesium (Mg)-Total	32.1		0.10	mg/L		04-JUN-19	R4655992
Manganese (Mn)-Total	0.00158		0.00010	mg/L		04-JUN-19	R4655992
Molybdenum (Mo)-Total	0.00207		0.000050	mg/L		04-JUN-19	R4655992
Nickel (Ni)-Total	0.00081		0.00050	mg/L		04-JUN-19	R4655992
Potassium (K)-Total	0.856		0.050	mg/L		04-JUN-19	R4655992
Selenium (Se)-Total	16.8		0.050	ug/L		04-JUN-19	R4655992
Silicon (Si)-Total	3.25		0.10	mg/L		04-JUN-19	R4655992
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Sodium (Na)-Total	4.03		0.050	mg/L		04-JUN-19	R4655992
Strontium (Sr)-Total	0.262		0.00020	mg/L		04-JUN-19	R4655992
Thallium (Tl)-Total	0.000020		0.000010	mg/L		04-JUN-19	R4655992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Uranium (U)-Total	0.00107		0.000010	mg/L		04-JUN-19	R4655992
Vanadium (V)-Total	<0.000050		0.00050	mg/L		04-JUN-19	R4655992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-19	R4655992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.4		1.0	mg/L		07-JUN-19	R4661595
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	191		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Carbonate (as CaCO3)	8.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		06-JUN-19	R4661465
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0142		0.0050	mg/L		06-JUN-19	R4661390
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-19	R4654463
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.46		0.50	mg/L		31-MAY-19	R4654463
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	650		2.0	uS/cm		06-JUN-19	R4661465
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.123		0.020	mg/L		31-MAY-19	R4654463
<b>Ion Balance Calculation</b>							
Ion Balance	93.5		-100	%		13-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.4			%		12-JUN-19	
Anion Sum	7.15			meq/L		12-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-3 GH_GWD2_WG_2019-04-01_NP Sampled By: CLIENT on 29-MAY-19 @ 12:00 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	6.68			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	3.15		0.0050	mg/L		31-MAY-19	R4654463
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0025		0.0010	mg/L		31-MAY-19	R4654463
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0024		0.0010	mg/L		31-MAY-19	R4653118
<b>Oxidation redution potential by elect.</b>							
ORP	428		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0048		0.0020	mg/L		05-JUN-19	R4659516
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	137		0.30	mg/L		31-MAY-19	R4654463
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	394	DLHC	20	mg/L		04-JUN-19	R4659889
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	0.76		0.10	NTU		31-MAY-19	R4653349
<b>pH</b>							
pH	8.45		0.10	pH		06-JUN-19	R4661465
L2282582-4 GH_GWB2_WG_2019-04-01_NP Sampled By: CLIENT on 29-MAY-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-JUN-19	R4659151
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		06-JUN-19	R4660411
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		06-JUN-19	R4660522
Total Organic Carbon	<0.50		0.50	mg/L		04-JUN-19	R4659151
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-JUN-19	12-JUN-19	R4666787
Dissolved Metals Filtration Location	FIELD					12-JUN-19	R4665447
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-JUN-19	14-JUN-19	R4669942
Dissolved Mercury Filtration Location	FIELD					14-JUN-19	R4670439
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					13-JUN-19	R4667011
Aluminum (Al)-Dissolved	0.0030	RRV	0.0030	mg/L	13-JUN-19	13-JUN-19	R4669204
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	12-JUN-19	12-JUN-19	R4666787
Barium (Ba)-Dissolved	0.00273	DTC	0.00010	mg/L	13-JUN-19	13-JUN-19	R4669204
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Boron (B)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	12-JUN-19	12-JUN-19	R4666787
Calcium (Ca)-Dissolved	0.164	DTC	0.050	mg/L	13-JUN-19	13-JUN-19	R4669204
Chromium (Cr)-Dissolved	0.00017	RRV	0.00010	mg/L	13-JUN-19	13-JUN-19	R4669204
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-JUN-19	12-JUN-19	R4666787
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-4 GH_GWB2_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	13-JUN-19	13-JUN-19	R4669204
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	13-JUN-19	13-JUN-19	R4669204
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	12-JUN-19	12-JUN-19	R4666787
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Potassium (K)-Dissolved	<0.050		0.050	mg/L	12-JUN-19	12-JUN-19	R4666787
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	12-JUN-19	12-JUN-19	R4666787
Silicon (Si)-Dissolved	0.827	DTC	0.050	mg/L	13-JUN-19	13-JUN-19	R4669204
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Sodium (Na)-Dissolved	0.515	DTC	0.050	mg/L	13-JUN-19	13-JUN-19	R4669204
Strontium (Sr)-Dissolved	0.00027	RRV	0.00020	mg/L	13-JUN-19	13-JUN-19	R4669204
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Tin (Sn)-Dissolved	0.00036	RRV	0.00010	mg/L	13-JUN-19	13-JUN-19	R4669204
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-JUN-19	12-JUN-19	R4666787
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	12-JUN-19	12-JUN-19	R4666787
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-JUN-19	12-JUN-19	R4666787
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	12-JUN-19	12-JUN-19	R4666787
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		13-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		04-JUN-19	R4655992
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		04-JUN-19	R4655992
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Arsenic (As)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Barium (Ba)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Boron (B)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		04-JUN-19	R4655992
Calcium (Ca)-Total	<0.050		0.050	mg/L		04-JUN-19	R4657747
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Cobalt (Co)-Total	<0.10		0.10	ug/L		04-JUN-19	R4655992
Copper (Cu)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Iron (Fe)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992
Lead (Pb)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Lithium (Li)-Total	<0.0010		0.0010	mg/L		04-JUN-19	R4655992
Magnesium (Mg)-Total	<0.10		0.10	mg/L		04-JUN-19	R4655992
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		04-JUN-19	R4655992
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Potassium (K)-Total	<0.050		0.050	mg/L		04-JUN-19	R4655992
Selenium (Se)-Total	<0.050		0.050	ug/L		04-JUN-19	R4655992
Silicon (Si)-Total	<0.10		0.10	mg/L		04-JUN-19	R4655992
Silver (Ag)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Sodium (Na)-Total	<0.050		0.050	mg/L		04-JUN-19	R4655992
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		04-JUN-19	R4655992
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Tin (Sn)-Total	<0.00010		0.00010	mg/L		04-JUN-19	R4655992
Titanium (Ti)-Total	<0.010		0.010	mg/L		04-JUN-19	R4655992

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2282582-4 GH_GWB2_WG_2019-04-01_NP							
Sampled By: CLIENT on 29-MAY-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Uranium (U)-Total	<0.000010		0.000010	mg/L		04-JUN-19	R4655992
Vanadium (V)-Total	<0.00050		0.00050	mg/L		04-JUN-19	R4655992
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		04-JUN-19	R4655992
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.2		1.0	mg/L		07-JUN-19	R4661595
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		06-JUN-19	R4661465
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0072		0.0050	mg/L		06-JUN-19	R4661390
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		31-MAY-19	R4654463
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		10-JUN-19	R4654463
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		06-JUN-19	R4661465
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		31-MAY-19	R4654463
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		13-JUN-19	
Anion Sum	<0.10			meq/L		13-JUN-19	
Cation Sum	<0.10			meq/L		13-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		13-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050	HTD	0.0050	mg/L		10-JUN-19	R4654463
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		31-MAY-19	R4654463
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		31-MAY-19	R4653118
<b>Oxidation redution potential by elect.</b>							
ORP	433		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		05-JUN-19	R4659516
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		10-JUN-19	R4654463
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		04-JUN-19	R4659889
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		31-MAY-19	R4653349
<b>pH</b>							
pH	5.80		0.10	pH		06-JUN-19	R4661465

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.





## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 1 of 13

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661595</b>							
<b>WG3071307-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.8		%		85-115	07-JUN-19
<b>WG3071307-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661465</b>							
<b>WG3070902-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.1		%		85-115	06-JUN-19
<b>WG3070902-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4666787</b>							
<b>WG3075217-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.6		%		80-120	12-JUN-19
<b>WG3075217-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-JUN-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4655992</b>							
<b>WG3066120-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.1		%		80-120	04-JUN-19
<b>WG3066120-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	04-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654463</b>							
<b>WG3066229-2</b>	<b>LCS</b>							
Bromide (Br)			101.9		%		85-115	31-MAY-19
<b>WG3066229-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659151</b>							
<b>WG3068326-3</b>	<b>DUP</b>	<b>L2282582-3</b>						
Dissolved Organic Carbon		1.23	1.13		mg/L	8.9	20	04-JUN-19
<b>WG3068326-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			92.0		%		80-120	04-JUN-19
<b>WG3068326-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4659151</b>							
<b>WG3068326-3</b>	<b>DUP</b>	<b>L2282582-3</b>						
Total Organic Carbon		1.19	1.22		mg/L	2.8	20	04-JUN-19
<b>WG3068326-2</b>	<b>LCS</b>							
Total Organic Carbon			94.0		%		80-120	04-JUN-19
<b>WG3068326-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4654463</b>							
<b>WG3066229-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	31-MAY-19
<b>WG3066229-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-MAY-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661465</b>							
<b>WG3070902-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.6		%		90-110	06-JUN-19
<b>WG3070902-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4654463</b>							
<b>WG3066229-2</b>	<b>LCS</b>							
Fluoride (F)			103.6		%		90-110	31-MAY-19
<b>WG3066229-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	31-MAY-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4669942</b>							
<b>WG3077855-3</b>	<b>DUP</b>	<b>L2282582-3</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	14-JUN-19
<b>WG3077855-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.3		%		80-120	14-JUN-19
<b>WG3077855-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	14-JUN-19
<b>WG3077855-4</b>	<b>MS</b>	<b>L2282582-4</b>						
Mercury (Hg)-Dissolved			84.1		%		70-130	14-JUN-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4658869</b>							
<b>WG3067860-8</b>	<b>DUP</b>	<b>L2282582-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-JUN-19
<b>WG3067860-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.3		%		80-120	05-JUN-19
<b>WG3067860-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	05-JUN-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4660522</b>							
<b>WG3069980-8</b>	<b>DUP</b>	<b>L2282582-1</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	06-JUN-19
<b>WG3069980-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.0		%		80-120	06-JUN-19
<b>WG3069980-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	06-JUN-19
<b>WG3069980-9</b>	<b>MS</b>	<b>L2282582-3</b>						
Mercury (Hg)-Total			87.4		%		70-130	06-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4666787</b>							
<b>WG3075217-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.4		%		80-120	12-JUN-19
Antimony (Sb)-Dissolved			95.2		%		80-120	12-JUN-19
Arsenic (As)-Dissolved			98.2		%		80-120	12-JUN-19
Barium (Ba)-Dissolved			103.7		%		80-120	12-JUN-19
Bismuth (Bi)-Dissolved			99.0		%		80-120	12-JUN-19
Boron (B)-Dissolved			94.4		%		80-120	12-JUN-19
Cadmium (Cd)-Dissolved			96.6		%		80-120	12-JUN-19
Calcium (Ca)-Dissolved			98.1		%		80-120	12-JUN-19
Chromium (Cr)-Dissolved			95.4		%		80-120	12-JUN-19
Cobalt (Co)-Dissolved			96.5		%		80-120	12-JUN-19
Copper (Cu)-Dissolved			95.2		%		80-120	12-JUN-19
Iron (Fe)-Dissolved			98.9		%		80-120	12-JUN-19
Lead (Pb)-Dissolved			99.4		%		80-120	12-JUN-19
Lithium (Li)-Dissolved			96.7		%		80-120	12-JUN-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	12-JUN-19
Manganese (Mn)-Dissolved			98.4		%		80-120	12-JUN-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	12-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4666787</b>							
<b>WG3075217-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			96.1		%		80-120	12-JUN-19
Potassium (K)-Dissolved			101.0		%		80-120	12-JUN-19
Selenium (Se)-Dissolved			99.1		%		80-120	12-JUN-19
Silicon (Si)-Dissolved			109.9		%		60-140	12-JUN-19
Silver (Ag)-Dissolved			94.2		%		80-120	12-JUN-19
Sodium (Na)-Dissolved			103.7		%		80-120	12-JUN-19
Strontium (Sr)-Dissolved			100.2		%		80-120	12-JUN-19
Thallium (Tl)-Dissolved			99.1		%		80-120	12-JUN-19
Tin (Sn)-Dissolved			98.2		%		80-120	12-JUN-19
Titanium (Ti)-Dissolved			92.6		%		80-120	12-JUN-19
Uranium (U)-Dissolved			97.2		%		80-120	12-JUN-19
Vanadium (V)-Dissolved			98.1		%		80-120	12-JUN-19
Zinc (Zn)-Dissolved			96.5		%		80-120	12-JUN-19
<b>WG3075217-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4666787</b>							
<b>WG3075217-1</b>	<b>MB</b>	<b>NP</b>						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-JUN-19
<b>Batch</b>	<b>R4669204</b>							
<b>WG3075702-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.8		%		80-120	13-JUN-19
Antimony (Sb)-Dissolved			99.2		%		80-120	13-JUN-19
Arsenic (As)-Dissolved			95.2		%		80-120	13-JUN-19
Barium (Ba)-Dissolved			95.6		%		80-120	13-JUN-19
Bismuth (Bi)-Dissolved			96.0		%		80-120	13-JUN-19
Boron (B)-Dissolved			104.3		%		80-120	13-JUN-19
Cadmium (Cd)-Dissolved			95.3		%		80-120	13-JUN-19
Calcium (Ca)-Dissolved			101.6		%		80-120	13-JUN-19
Chromium (Cr)-Dissolved			98.8		%		80-120	13-JUN-19
Cobalt (Co)-Dissolved			95.0		%		80-120	13-JUN-19
Copper (Cu)-Dissolved			96.2		%		80-120	13-JUN-19
Iron (Fe)-Dissolved			97.8		%		80-120	13-JUN-19
Lead (Pb)-Dissolved			101.8		%		80-120	13-JUN-19
Lithium (Li)-Dissolved			97.7		%		80-120	13-JUN-19
Magnesium (Mg)-Dissolved			97.6		%		80-120	13-JUN-19
Manganese (Mn)-Dissolved			99.5		%		80-120	13-JUN-19
Molybdenum (Mo)-Dissolved			101.1		%		80-120	13-JUN-19
Nickel (Ni)-Dissolved			96.2		%		80-120	13-JUN-19
Potassium (K)-Dissolved			101.6		%		80-120	13-JUN-19
Selenium (Se)-Dissolved			104.9		%		80-120	13-JUN-19
Silicon (Si)-Dissolved			104.6		%		60-140	13-JUN-19
Silver (Ag)-Dissolved			96.7		%		80-120	13-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4669204</b>							
<b>WG3075702-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			100.4		%		80-120	13-JUN-19
Strontium (Sr)-Dissolved			105.8		%		80-120	13-JUN-19
Thallium (Tl)-Dissolved			97.5		%		80-120	13-JUN-19
Tin (Sn)-Dissolved			96.2		%		80-120	13-JUN-19
Titanium (Ti)-Dissolved			91.9		%		80-120	13-JUN-19
Uranium (U)-Dissolved			101.7		%		80-120	13-JUN-19
Vanadium (V)-Dissolved			98.6		%		80-120	13-JUN-19
Zinc (Zn)-Dissolved			101.1		%		80-120	13-JUN-19
<b>WG3075702-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4669204</b>							
<b>WG3075702-1</b>	<b>MB</b>	<b>NP</b>						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUN-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4655992</b>							
<b>WG3066120-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			103.5		%		80-120	04-JUN-19
Antimony (Sb)-Total			107.5		%		80-120	04-JUN-19
Arsenic (As)-Total			103.3		%		80-120	04-JUN-19
Barium (Ba)-Total			102.1		%		80-120	04-JUN-19
Bismuth (Bi)-Total			100.6		%		80-120	04-JUN-19
Boron (B)-Total			96.7		%		80-120	04-JUN-19
Cadmium (Cd)-Total			100.2		%		80-120	04-JUN-19
Calcium (Ca)-Total			101.8		%		80-120	04-JUN-19
Chromium (Cr)-Total			100.9		%		80-120	04-JUN-19
Cobalt (Co)-Total			100.6		%		80-120	04-JUN-19
Copper (Cu)-Total			102.0		%		80-120	04-JUN-19
Iron (Fe)-Total			98.9		%		80-120	04-JUN-19
Lead (Pb)-Total			101.4		%		80-120	04-JUN-19
Lithium (Li)-Total			98.5		%		80-120	04-JUN-19
Magnesium (Mg)-Total			102.7		%		80-120	04-JUN-19
Manganese (Mn)-Total			99.8		%		80-120	04-JUN-19
Molybdenum (Mo)-Total			102.3		%		80-120	04-JUN-19
Nickel (Ni)-Total			101.6		%		80-120	04-JUN-19
Potassium (K)-Total			102.7		%		80-120	04-JUN-19
Selenium (Se)-Total			98.4		%		80-120	04-JUN-19
Silicon (Si)-Total			103.3		%		80-120	04-JUN-19
Silver (Ag)-Total			101.6		%		80-120	04-JUN-19
Sodium (Na)-Total			99.8		%		80-120	04-JUN-19
Strontium (Sr)-Total			100.2		%		80-120	04-JUN-19
Thallium (Tl)-Total			100.6		%		80-120	04-JUN-19
Tin (Sn)-Total			101.5		%		80-120	04-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4655992</b>							
<b>WG3066120-2 LCS</b>								
Titanium (Ti)-Total			102.5		%		80-120	04-JUN-19
Uranium (U)-Total			96.8		%		80-120	04-JUN-19
Vanadium (V)-Total			104.2		%		80-120	04-JUN-19
Zinc (Zn)-Total			100.2		%		80-120	04-JUN-19
<b>WG3066120-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	04-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	04-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	04-JUN-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	04-JUN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	04-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	04-JUN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	04-JUN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	04-JUN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	04-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	04-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	04-JUN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-JUN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-JUN-19





## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
Water								
Batch R4655992								
WG3066120-1 MB								
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-JUN-19
<b>NH3-L-F-CL</b>								
Water								
Batch R4661390								
WG3070933-6 LCS								
Ammonia as N			96.8		%		85-115	06-JUN-19
WG3070933-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	06-JUN-19
<b>NO2-L-IC-N-CL</b>								
Water								
Batch R4654463								
WG3066229-2 LCS								
Nitrite (as N)			100.7		%		90-110	31-MAY-19
WG3066229-1 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	31-MAY-19
<b>NO3-L-IC-N-CL</b>								
Water								
Batch R4654463								
WG3066229-2 LCS								
Nitrate (as N)			100.4		%		90-110	31-MAY-19
WG3066229-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	31-MAY-19
<b>ORP-CL</b>								
Water								
Batch R4660835								
WG3069914-1 CRM								
ORP		CL-ORP	220		mV		210-230	06-JUN-19
<b>P-T-L-COL-CL</b>								
Water								
Batch R4659516								
WG3068653-30 LCS								
Phosphorus (P)-Total			110.2		%		80-120	05-JUN-19
WG3068653-29 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-JUN-19
<b>PH-CL</b>								
Water								
Batch R4661465								
WG3070902-17 LCS								
pH			7.02		pH		6.9-7.1	06-JUN-19



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4653118							
<b>WG3064405-26</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	31-MAY-19
<b>WG3064405-25</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-MAY-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4654463							
<b>WG3066229-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.8		%		90-110	31-MAY-19
<b>WG3066229-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	31-MAY-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4659889							
<b>WG3067059-12</b>	<b>DUP</b>	<b>L2282582-3</b>						
Total Dissolved Solids		394	397		mg/L	0.8	20	04-JUN-19
<b>WG3067059-11</b>	<b>LCS</b>							
Total Dissolved Solids			95.0		%		85-115	04-JUN-19
<b>WG3067059-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-JUN-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4660411							
<b>WG3069884-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.0		%		75-125	06-JUN-19
<b>WG3069884-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-JUN-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4660306							
<b>WG3068648-11</b>	<b>LCS</b>							
Total Suspended Solids			96.0		%		85-115	05-JUN-19
<b>WG3068648-8</b>	<b>LCS</b>							
Total Suspended Solids			108.1		%		85-115	05-JUN-19
<b>WG3068648-10</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>WG3068648-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>TURBIDITY-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4653349</b>							
<b>WG3064559-23</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	31-MAY-19
<b>WG3064559-22</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-MAY-19

# Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2282582

Report Date: 14-JUN-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	29-MAY-19 11:55	06-JUN-19 08:50	0.25	189	hours	EHTR-FM
	2	29-MAY-19 13:30	06-JUN-19 08:50	0.25	187	hours	EHTR-FM
	3	29-MAY-19 12:00	06-JUN-19 08:50	0.25	189	hours	EHTR-FM
	4	29-MAY-19 12:00	06-JUN-19 08:50	0.25	189	hours	EHTR-FM
pH	1	29-MAY-19 11:55	06-JUN-19 15:00	0.25	195	hours	EHTR-FM
	2	29-MAY-19 13:30	06-JUN-19 15:00	0.25	193	hours	EHTR-FM
	3	29-MAY-19 12:00	06-JUN-19 15:00	0.25	195	hours	EHTR-FM
	4	29-MAY-19 12:00	06-JUN-19 15:00	0.25	195	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	4	29-MAY-19 12:00	10-JUN-19 09:30	3	12	days	EHT

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2282582 were received on 30-MAY-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>QTR_GW_2019-04-01</b>		TURNAROUND TIME:		RUSH:				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>		
Facility Name / Job# Greenhills Operation		Lab Name AES Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jenni Kropp		Lab Contact Lyudmyla Shvets		Email 1: jennifer.kropp@teck.com		X	X	X
Email jennifer.kropp@teck.com		Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: DL-Equis-GHQ-Field@teck.co		X	X	X
Address P.O. BOX 5000		Address 2559 29 Street NE		Email 3: teckcoal@equisonline.com				X
City Elkford	Province BC	City Calgary	Province AB	PO number 610013				
Postal Code V0B1H0	Country Canada	Postal Code T1Y 7B5	Country Canada					
Phone Number 250-865-3048			Phone Number 403 407 1794					

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filteren - F: Field, L: Lab, P: Print & Lab, N: None



L2282582-COFC

*SSQ*

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA				
GH_GA-MW-3_WG_2019-04-01_NP	GH_GA-MW-3	WG		2019/05/29	11:55	G	8	1	1	1	1	1	1	1	1				
GH_MW-ERSC-1_WG_2019-04-01_NP	GH_MW-ERSC-1	WG		2019/05/29	13:30	G	8	1	1	1	1	1	1	1	1				
GH_GWD2_WG_2019-04-01_NP	GH_GWD2	WG		2019/05/29		G	8	1	1	1	1	1	1	1	1				
GH_GWB2_WG_2019-04-01_NP	GH_GWB2	WG		2019/05/29		G	8	1	1	1	1	1	1	1	1				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	5/30 9:15

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>SAMPLER'S INFO</b>	
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Sampler's Name	Mobile #
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

10c



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 31-MAY-19  
Report Date: 10-JUN-19 17:10 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2283097  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-1 GH_MW-UTC-1D_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-MAY-19 @ 11:45							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	5.51		0.50	mg/L		04-JUN-19	R4659191
Total Kjeldahl Nitrogen	0.560		0.050	mg/L		07-JUN-19	R4661191
Mercury (Hg)-Total	0.0207		0.0050	ug/L		07-JUN-19	R4661672
Total Organic Carbon	5.97		0.50	mg/L		04-JUN-19	R4659191
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-JUN-19	05-JUN-19	R4659519
Dissolved Metals Filtration Location	FIELD					04-JUN-19	R4655927
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-JUN-19	04-JUN-19	R4655189
Dissolved Mercury Filtration Location	FIELD					03-JUN-19	R4654427
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-JUN-19	R4655927
Aluminum (Al)-Dissolved	0.0174		0.0030	mg/L	04-JUN-19	05-JUN-19	R4659519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Arsenic (As)-Dissolved	0.00234		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Barium (Ba)-Dissolved	0.0540		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Boron (B)-Dissolved	0.897		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Cadmium (Cd)-Dissolved	0.0129		0.0050	ug/L	04-JUN-19	05-JUN-19	R4659519
Calcium (Ca)-Dissolved	2.52		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Chromium (Cr)-Dissolved	0.00070		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Cobalt (Co)-Dissolved	0.11		0.10	ug/L	04-JUN-19	05-JUN-19	R4659519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-JUN-19	05-JUN-19	R4659519
Iron (Fe)-Dissolved	0.168		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Lithium (Li)-Dissolved	0.996		0.0010	mg/L	04-JUN-19	05-JUN-19	R4659519
Magnesium (Mg)-Dissolved	0.69		0.10	mg/L	04-JUN-19	05-JUN-19	R4659519
Manganese (Mn)-Dissolved	0.0163		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Molybdenum (Mo)-Dissolved	0.0165		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Nickel (Ni)-Dissolved	0.00702		0.00050	mg/L	04-JUN-19	05-JUN-19	R4659519
Potassium (K)-Dissolved	0.889		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Selenium (Se)-Dissolved	0.891	DTSE	0.050	ug/L	04-JUN-19	05-JUN-19	R4659519
Silicon (Si)-Dissolved	2.87		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Sodium (Na)-Dissolved	398		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Strontium (Sr)-Dissolved	0.151		0.00020	mg/L	04-JUN-19	05-JUN-19	R4659519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Uranium (U)-Dissolved	0.00471		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Vanadium (V)-Dissolved	0.00215		0.00050	mg/L	04-JUN-19	05-JUN-19	R4659519
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-JUN-19	05-JUN-19	R4659519
<b>Hardness</b>							
Hardness (as CaCO3)	9.13		0.50	mg/L		05-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.053		0.020	ug/L		05-JUN-19	R4659519
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	0.0000091		0.0000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-1 GH_MW-UTC-1D_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-MAY-19 @ 11:45							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.881		0.0030	mg/L		05-JUN-19	R4659519
Antimony (Sb)-Total	0.00023		0.00010	mg/L		05-JUN-19	R4659519
Arsenic (As)-Total	0.00334		0.00010	mg/L		05-JUN-19	R4659519
Barium (Ba)-Total	0.0671		0.00010	mg/L		05-JUN-19	R4659519
Bismuth (Bi)-Total	0.000086		0.000050	mg/L		05-JUN-19	R4659519
Boron (B)-Total	0.890		0.010	mg/L		05-JUN-19	R4659519
Cadmium (Cd)-Total	1.01		0.0050	ug/L		05-JUN-19	R4659519
Calcium (Ca)-Total	2.62		0.050	mg/L		05-JUN-19	R4659519
Chromium (Cr)-Total	0.00225		0.00010	mg/L		05-JUN-19	R4659519
Cobalt (Co)-Total	0.86		0.10	ug/L		05-JUN-19	R4659519
Copper (Cu)-Total	0.00825		0.00050	mg/L		05-JUN-19	R4659519
Iron (Fe)-Total	0.701		0.010	mg/L		05-JUN-19	R4659519
Lead (Pb)-Total	0.00172		0.000050	mg/L		05-JUN-19	R4659519
Lithium (Li)-Total	0.952		0.0010	mg/L		05-JUN-19	R4659519
Magnesium (Mg)-Total	0.90		0.10	mg/L		05-JUN-19	R4659519
Manganese (Mn)-Total	0.0217		0.00010	mg/L		05-JUN-19	R4659519
Molybdenum (Mo)-Total	0.0160		0.000050	mg/L		05-JUN-19	R4659519
Nickel (Ni)-Total	0.0158		0.00050	mg/L		05-JUN-19	R4659519
Potassium (K)-Total	1.13		0.050	mg/L		05-JUN-19	R4659519
Selenium (Se)-Total	0.584		0.050	ug/L		05-JUN-19	R4659519
Silicon (Si)-Total	4.51		0.10	mg/L		05-JUN-19	R4659519
Silver (Ag)-Total	0.000193		0.000010	mg/L		05-JUN-19	R4659519
Sodium (Na)-Total	399		0.050	mg/L		05-JUN-19	R4659519
Strontium (Sr)-Total	0.158		0.00020	mg/L		05-JUN-19	R4659519
Thallium (Tl)-Total	0.000014		0.000010	mg/L		05-JUN-19	R4659519
Tin (Sn)-Total	0.00053		0.00010	mg/L		05-JUN-19	R4659519
Titanium (Ti)-Total	<0.010		0.010	mg/L		05-JUN-19	R4659519
Uranium (U)-Total	0.00490		0.000010	mg/L		05-JUN-19	R4659519
Vanadium (V)-Total	0.00411		0.00050	mg/L		05-JUN-19	R4659519
Zinc (Zn)-Total	0.151		0.0030	mg/L		05-JUN-19	R4659519
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-JUN-19	R4661868
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	662		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Carbonate (as CaCO3)	80.6		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Total (as CaCO3)	743		1.0	mg/L		08-JUN-19	R4662795
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.264		0.0050	mg/L		07-JUN-19	R4662746
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.39	DLHC	0.25	mg/L		01-JUN-19	R4653596
<b>Chloride in Water by IC</b>							
Chloride (Cl)	74.5	DLHC	2.5	mg/L		01-JUN-19	R4653596
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1660		2.0	uS/cm		08-JUN-19	R4662795
<b>Fluoride in Water by IC</b>							
Fluoride (F)	6.80	DLHC	0.10	mg/L		01-JUN-19	R4653596
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		10-JUN-19	
Anion Sum	17.6			meq/L		10-JUN-19	
Cation Sum	17.5			meq/L		10-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-1 GH_MW-UTC-1D_WG_2019-04-01_NP Sampled By: CLIENT on 30-MAY-19 @ 11:45 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	99.9		-100	%		10-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		01-JUN-19	R4653596
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		01-JUN-19	R4653596
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.266	DLHC	0.010	mg/L		02-JUN-19	R4653712
<b>Oxidation redution potential by elect.</b>							
ORP	325		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.300	DLHC	0.025	mg/L		07-JUN-19	R4661625
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	12.2	DLHC	1.5	mg/L		01-JUN-19	R4653596
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	938	DLHC	20	mg/L		05-JUN-19	R4661502
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.6		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	7.89		0.10	NTU		01-JUN-19	R4653561
<b>pH</b>							
pH	8.90		0.10	pH		08-JUN-19	R4662795
L2283097-2 GH_MW-UTC-1S_WG_2019-04-01_NP Sampled By: CLIENT on 30-MAY-19 @ 13:05 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.54		0.50	mg/L		04-JUN-19	R4659191
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		07-JUN-19	R4661191
Mercury (Hg)-Total	0.00310		0.00050	ug/L		07-JUN-19	R4661672
Total Organic Carbon	0.61		0.50	mg/L		04-JUN-19	R4659191
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-JUN-19	05-JUN-19	R4659519
Dissolved Metals Filtration Location	FIELD					04-JUN-19	R4655927
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-JUN-19	04-JUN-19	R4655189
Dissolved Mercury Filtration Location	FIELD					03-JUN-19	R4654427
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-JUN-19	R4655927
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-JUN-19	05-JUN-19	R4659519
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Barium (Ba)-Dissolved	0.0737		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Boron (B)-Dissolved	0.086		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	04-JUN-19	05-JUN-19	R4659519
Calcium (Ca)-Dissolved	59.8		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	04-JUN-19	05-JUN-19	R4659519
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-JUN-19	05-JUN-19	R4659519
Iron (Fe)-Dissolved	0.022		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-2 GH_MW-UTC-1S_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-MAY-19 @ 13:05							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lithium (Li)-Dissolved	0.0374		0.0010	mg/L	04-JUN-19	05-JUN-19	R4659519
Magnesium (Mg)-Dissolved	19.2		0.10	mg/L	04-JUN-19	05-JUN-19	R4659519
Manganese (Mn)-Dissolved	0.0130		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Molybdenum (Mo)-Dissolved	0.00140		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Nickel (Ni)-Dissolved	0.00094		0.00050	mg/L	04-JUN-19	05-JUN-19	R4659519
Potassium (K)-Dissolved	1.15		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Selenium (Se)-Dissolved	1.81		0.050	ug/L	04-JUN-19	05-JUN-19	R4659519
Silicon (Si)-Dissolved	4.19		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Sodium (Na)-Dissolved	17.1		0.050	mg/L	04-JUN-19	05-JUN-19	R4659519
Strontium (Sr)-Dissolved	0.932		0.00020	mg/L	04-JUN-19	05-JUN-19	R4659519
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-JUN-19	05-JUN-19	R4659519
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-JUN-19	05-JUN-19	R4659519
Uranium (U)-Dissolved	0.000299		0.000010	mg/L	04-JUN-19	05-JUN-19	R4659519
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	04-JUN-19	05-JUN-19	R4659519
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	04-JUN-19	05-JUN-19	R4659519
<b>Hardness</b>							
Hardness (as CaCO3)	228		0.50	mg/L		05-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		05-JUN-19	R4659519
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		05-JUN-19	R4658869
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0535		0.0030	mg/L		05-JUN-19	R4659519
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		05-JUN-19	R4659519
Arsenic (As)-Total	0.00015		0.00010	mg/L		05-JUN-19	R4659519
Barium (Ba)-Total	0.0759		0.00010	mg/L		05-JUN-19	R4659519
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		05-JUN-19	R4659519
Boron (B)-Total	0.093		0.010	mg/L		05-JUN-19	R4659519
Cadmium (Cd)-Total	0.0153		0.0050	ug/L		05-JUN-19	R4659519
Calcium (Ca)-Total	57.9		0.050	mg/L		05-JUN-19	R4659519
Chromium (Cr)-Total	0.00025		0.00010	mg/L		05-JUN-19	R4659519
Cobalt (Co)-Total	0.11		0.10	ug/L		05-JUN-19	R4659519
Copper (Cu)-Total	0.00050		0.00050	mg/L		05-JUN-19	R4659519
Iron (Fe)-Total	0.461		0.010	mg/L		05-JUN-19	R4659519
Lead (Pb)-Total	0.000121		0.000050	mg/L		05-JUN-19	R4659519
Lithium (Li)-Total	0.0360		0.0010	mg/L		05-JUN-19	R4659519
Magnesium (Mg)-Total	18.6		0.10	mg/L		05-JUN-19	R4659519
Manganese (Mn)-Total	0.0107		0.00010	mg/L		05-JUN-19	R4659519
Molybdenum (Mo)-Total	0.00125		0.000050	mg/L		05-JUN-19	R4659519
Nickel (Ni)-Total	0.00097		0.00050	mg/L		05-JUN-19	R4659519
Potassium (K)-Total	1.13		0.050	mg/L		05-JUN-19	R4659519
Selenium (Se)-Total	1.60		0.050	ug/L		05-JUN-19	R4659519
Silicon (Si)-Total	4.52		0.10	mg/L		05-JUN-19	R4659519
Silver (Ag)-Total	0.000716		0.000010	mg/L		05-JUN-19	R4659519
Sodium (Na)-Total	16.3		0.050	mg/L		05-JUN-19	R4659519
Strontium (Sr)-Total	0.962		0.00020	mg/L		05-JUN-19	R4659519
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		05-JUN-19	R4659519
Tin (Sn)-Total	<0.00010		0.00010	mg/L		05-JUN-19	R4659519
Titanium (Ti)-Total	<0.010		0.010	mg/L		05-JUN-19	R4659519

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-2 GH_MW-UTC-1S_WG_2019-04-01_NP							
Sampled By: CLIENT on 30-MAY-19 @ 13:05							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Uranium (U)-Total	0.000302		0.000010	mg/L		05-JUN-19	R4659519
Vanadium (V)-Total	<0.00050		0.00050	mg/L		05-JUN-19	R4659519
Zinc (Zn)-Total	0.0098		0.0030	mg/L		05-JUN-19	R4659519
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		07-JUN-19	R4661868
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	199		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-JUN-19	R4662795
Alkalinity, Total (as CaCO3)	199		1.0	mg/L		08-JUN-19	R4662795
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0177		0.0050	mg/L		07-JUN-19	R4662746
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-JUN-19	R4653596
<b>Chloride in Water by IC</b>							
Chloride (Cl)	8.09		0.50	mg/L		01-JUN-19	R4653596
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	460		2.0	uS/cm		08-JUN-19	R4662795
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.165		0.020	mg/L		01-JUN-19	R4653596
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	4.0			%		10-JUN-19	
Anion Sum	4.93			meq/L		10-JUN-19	
Cation Sum	5.34			meq/L		10-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	108		-100	%		10-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0364		0.0050	mg/L		01-JUN-19	R4653596
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-JUN-19	R4653596
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		02-JUN-19	R4653712
<b>Oxidation redution potential by elect.</b>							
ORP	337		-1000	mV		06-JUN-19	R4660835
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0023		0.0020	mg/L		07-JUN-19	R4661625
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	34.1		0.30	mg/L		01-JUN-19	R4653596
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	270	DLHC	20	mg/L		05-JUN-19	R4661502
<b>Total Suspended Solids</b>							
Total Suspended Solids	40.8		1.0	mg/L		05-JUN-19	R4660306
<b>Turbidity</b>							
Turbidity	20.0		0.10	NTU		01-JUN-19	R4653561
<b>pH</b>							
pH	8.26		0.10	pH		08-JUN-19	R4662795
L2283097-3 GH_MW-UTC-1S_WG_2019-04-01_FB-HG							
Sampled By: CLIENT on 30-MAY-19 @ 13:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		07-JUN-19	R4661672

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2283097-3 GH_MW-UTC-1S_WG_2019-04-01_FB-HG Sampled By: CLIENT on 30-MAY-19 @ 13:05 Matrix: WG							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
		Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
<p>This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.</p>			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

QTR\_GW\_2019-04-01

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 1 of 10

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4661868							
<b>WG3071606-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.1		%		85-115	07-JUN-19
<b>WG3071606-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4662795							
<b>WG3072356-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	08-JUN-19
<b>WG3072356-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4659519							
<b>WG3066963-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.6		%		80-120	05-JUN-19
<b>WG3066963-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-JUN-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4659519							
<b>WG3066726-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.5		%		80-120	05-JUN-19
<b>WG3066726-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	05-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Bromide (Br)			102.0		%		85-115	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4659191							
<b>WG3068396-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.0		%		80-120	04-JUN-19
<b>WG3068396-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4659191							
<b>WG3068396-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	04-JUN-19
<b>WG3068396-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Chloride (Cl)			100.8		%		90-110	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4662795							
<b>WG3072356-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			105.6		%		90-110	08-JUN-19
<b>WG3072356-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	08-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Fluoride (F)			104.7		%		90-110	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-JUN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4655189							
<b>WG3066173-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.7		%		80-120	04-JUN-19
<b>WG3066173-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4658869							
<b>WG3067860-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.3		%		80-120	05-JUN-19
<b>WG3067860-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	05-JUN-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4661672</b>							
<b>WG3071309-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.8		%		80-120	07-JUN-19
<b>WG3071309-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	07-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4659519</b>							
<b>WG3066963-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.0		%		80-120	05-JUN-19
Antimony (Sb)-Dissolved			94.4		%		80-120	05-JUN-19
Arsenic (As)-Dissolved			97.7		%		80-120	05-JUN-19
Barium (Ba)-Dissolved			98.7		%		80-120	05-JUN-19
Bismuth (Bi)-Dissolved			96.4		%		80-120	05-JUN-19
Boron (B)-Dissolved			93.1		%		80-120	05-JUN-19
Cadmium (Cd)-Dissolved			98.1		%		80-120	05-JUN-19
Calcium (Ca)-Dissolved			94.7		%		80-120	05-JUN-19
Chromium (Cr)-Dissolved			98.7		%		80-120	05-JUN-19
Cobalt (Co)-Dissolved			98.7		%		80-120	05-JUN-19
Copper (Cu)-Dissolved			97.2		%		80-120	05-JUN-19
Iron (Fe)-Dissolved			94.3		%		80-120	05-JUN-19
Lead (Pb)-Dissolved			98.2		%		80-120	05-JUN-19
Lithium (Li)-Dissolved			90.4		%		80-120	05-JUN-19
Magnesium (Mg)-Dissolved			100.1		%		80-120	05-JUN-19
Manganese (Mn)-Dissolved			101.1		%		80-120	05-JUN-19
Molybdenum (Mo)-Dissolved			95.4		%		80-120	05-JUN-19
Nickel (Ni)-Dissolved			98.0		%		80-120	05-JUN-19
Potassium (K)-Dissolved			98.9		%		80-120	05-JUN-19
Selenium (Se)-Dissolved			94.7		%		80-120	05-JUN-19
Silicon (Si)-Dissolved			101.6		%		60-140	05-JUN-19
Silver (Ag)-Dissolved			92.4		%		80-120	05-JUN-19
Sodium (Na)-Dissolved			100.4		%		80-120	05-JUN-19
Strontium (Sr)-Dissolved			97.4		%		80-120	05-JUN-19
Thallium (Tl)-Dissolved			94.1		%		80-120	05-JUN-19
Tin (Sn)-Dissolved			93.5		%		80-120	05-JUN-19
Titanium (Ti)-Dissolved			96.0		%		80-120	05-JUN-19
Uranium (U)-Dissolved			95.4		%		80-120	05-JUN-19



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659519</b>							
<b>WG3066963-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			99.3		%		80-120	05-JUN-19
Zinc (Zn)-Dissolved			98.7		%		80-120	05-JUN-19
<b>WG3066963-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-JUN-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659519</b>							
<b>WG3066726-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			107.2		%		80-120	05-JUN-19
Antimony (Sb)-Total			101.9		%		80-120	05-JUN-19
Arsenic (As)-Total			96.7		%		80-120	05-JUN-19
Barium (Ba)-Total			97.3		%		80-120	05-JUN-19
Bismuth (Bi)-Total			98.3		%		80-120	05-JUN-19
Boron (B)-Total			98.5		%		80-120	05-JUN-19
Cadmium (Cd)-Total			97.9		%		80-120	05-JUN-19
Calcium (Ca)-Total			97.0		%		80-120	05-JUN-19
Chromium (Cr)-Total			99.4		%		80-120	05-JUN-19
Cobalt (Co)-Total			98.0		%		80-120	05-JUN-19
Copper (Cu)-Total			96.3		%		80-120	05-JUN-19
Iron (Fe)-Total			96.6		%		80-120	05-JUN-19
Lead (Pb)-Total			99.3		%		80-120	05-JUN-19
Lithium (Li)-Total			95.7		%		80-120	05-JUN-19
Magnesium (Mg)-Total			99.9		%		80-120	05-JUN-19
Manganese (Mn)-Total			100.3		%		80-120	05-JUN-19
Molybdenum (Mo)-Total			99.3		%		80-120	05-JUN-19
Nickel (Ni)-Total			98.7		%		80-120	05-JUN-19
Potassium (K)-Total			97.4		%		80-120	05-JUN-19
Selenium (Se)-Total			96.6		%		80-120	05-JUN-19
Silicon (Si)-Total			104.4		%		80-120	05-JUN-19
Silver (Ag)-Total			97.5		%		80-120	05-JUN-19
Sodium (Na)-Total			99.8		%		80-120	05-JUN-19
Strontium (Sr)-Total			100.5		%		80-120	05-JUN-19
Thallium (Tl)-Total			97.0		%		80-120	05-JUN-19
Tin (Sn)-Total			97.0		%		80-120	05-JUN-19
Titanium (Ti)-Total			97.1		%		80-120	05-JUN-19
Uranium (U)-Total			99.2		%		80-120	05-JUN-19
Vanadium (V)-Total			98.6		%		80-120	05-JUN-19
Zinc (Zn)-Total			95.3		%		80-120	05-JUN-19
<b>WG3066726-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	05-JUN-19



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4659519</b>							
<b>WG3066726-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	05-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	05-JUN-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	05-JUN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	05-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	05-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	05-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	05-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	05-JUN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	05-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	05-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	05-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	05-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	05-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	05-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	05-JUN-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4662746</b>							
<b>WG3072627-2</b>	<b>LCS</b>							
Ammonia as N			99.1		%		85-115	07-JUN-19
<b>WG3072627-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Nitrite (as N)			103.8		%		90-110	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-JUN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Nitrate (as N)			94.2		%		90-110	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4660835							
<b>WG3069914-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	06-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4661625							
<b>WG3071299-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.6		%		80-120	07-JUN-19
<b>WG3071299-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4653712							
<b>WG3065128-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	02-JUN-19
<b>WG3065128-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4653596							
<b>WG3065159-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	01-JUN-19
<b>WG3065159-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661502</b>							
<b>WG3068137-2</b>	<b>LCS</b>							
Total Dissolved Solids			94.9		%		85-115	05-JUN-19
<b>WG3068137-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	05-JUN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661191</b>							
<b>WG3070884-12</b>	<b>DUP</b>	<b>L2283097-2</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3070884-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.8		%		75-125	07-JUN-19
<b>WG3070884-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	07-JUN-19
<b>WG3070884-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.2		%		75-125	07-JUN-19
<b>WG3070884-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3070884-11</b>	<b>MS</b>	<b>L2283097-2</b>						
Total Kjeldahl Nitrogen			103.0		%		70-130	07-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4660306</b>							
<b>WG3068648-14</b>	<b>LCS</b>							
Total Suspended Solids			97.9		%		85-115	05-JUN-19
<b>WG3068648-17</b>	<b>LCS</b>							
Total Suspended Solids			100.1		%		85-115	05-JUN-19
<b>WG3068648-13</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>WG3068648-16</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4653561</b>							
<b>WG3065052-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	01-JUN-19
<b>WG3065052-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-JUN-19



# Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2283097

Report Date: 10-JUN-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	30-MAY-19 11:45	06-JUN-19 08:50	0.25	165	hours	EHTR-FM
	2	30-MAY-19 13:05	06-JUN-19 08:50	0.25	164	hours	EHTR-FM
pH	1	30-MAY-19 11:45	08-JUN-19 11:00	0.25	215	hours	EHTR-FM
	2	30-MAY-19 13:05	08-JUN-19 11:00	0.25	214	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2283097 were received on 31-MAY-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **QTR\_GW\_2019-04-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary				Report Format / Distribution				
Project Manager Jenni Kropp				Lab Contact Lyudmyla Shvets				Email 1: jennifer.kropp@teck.com		Excel	PDF	EDD
Email jennifer.kropp@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com				Email 2: DL-Equis-GHO-Field@teck.co		X	X	X
Address P.O. BOX 5000				Address 2559 29 Street NE				Email 3: teckcoal@equisonline.com		X	X	X
City Elkford		Province BC		City Calgary		Province AB		PO number 610013				
Postal Code V0B1H0		Country Canada		Postal Code T1Y 7B5		Country Canada						
Phone Number 250-865-3048				Phone Number 403 407 1794								

SAMPLE DETAILS								ANALYSIS REQUESTED								
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Filteret - F: Field, L: Lab, FL: Field & Lab, N: None
								ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	
GH_MW-UTC-ID_WG_2019-04-01_NP	GH_MW-UTC-ID	WG		2019/05/30	11:45	G	8	1	1	1	1	1	1	1	1	
GH_MW-UTC-IS_WG_2019-04-01_NP	GH_MW-UTC-IS	WG		2019/05/30	13:05	G	8	1	1	1	1	1	1	1	1	
GH_MW-UTC-IS_WG_2019-04-01_FB-HG	GH_MW-UTC-IS	WG		2019/05/30	13:05	G	1								1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	5/31 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time



L2283097-COFC

3097

FL



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 06-JUN-19  
Report Date: 18-JUN-19 20:48 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2286925  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: QTR\_GW\_2019-04-01  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286925-1 GH_MW-PC_WG_2019-04-01_NP							
Sampled By: CLIENT on 05-JUN-19 @ 11:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.22		0.50	mg/L		12-JUN-19	R4668064
Total Kjeldahl Nitrogen	0.405		0.050	mg/L		16-JUN-19	R4671467
Mercury (Hg)-Total	0.00091		0.00050	ug/L		12-JUN-19	R4665908
Total Organic Carbon	1.50		0.50	mg/L		12-JUN-19	R4668064
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-19	10-JUN-19	R4662974
Dissolved Metals Filtration Location	FIELD					09-JUN-19	R4662165
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	13-JUN-19	13-JUN-19	R4667590
Dissolved Mercury Filtration Location	FIELD					13-JUN-19	R4667207
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					09-JUN-19	R4662165
Aluminum (Al)-Dissolved	0.0228		0.0030	mg/L	09-JUN-19	10-JUN-19	R4662974
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-19	10-JUN-19	R4662974
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	09-JUN-19	11-JUN-19	R4663601
Barium (Ba)-Dissolved	0.0982		0.00010	mg/L	09-JUN-19	10-JUN-19	R4662974
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-19	10-JUN-19	R4662974
Boron (B)-Dissolved	<0.010		0.010	mg/L	09-JUN-19	10-JUN-19	R4662974
Cadmium (Cd)-Dissolved	0.0417		0.0050	ug/L	09-JUN-19	10-JUN-19	R4662974
Calcium (Ca)-Dissolved	117		0.050	mg/L	09-JUN-19	10-JUN-19	R4662974
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	09-JUN-19	10-JUN-19	R4662974
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-19	10-JUN-19	R4662974
Copper (Cu)-Dissolved	0.0537		0.00050	mg/L	09-JUN-19	10-JUN-19	R4662974
Iron (Fe)-Dissolved	0.010		0.010	mg/L	09-JUN-19	10-JUN-19	R4662974
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-19	10-JUN-19	R4662974
Lithium (Li)-Dissolved	0.0072		0.0010	mg/L	09-JUN-19	10-JUN-19	R4662974
Magnesium (Mg)-Dissolved	86.0		0.10	mg/L	09-JUN-19	10-JUN-19	R4662974
Manganese (Mn)-Dissolved	0.00066		0.00010	mg/L	09-JUN-19	10-JUN-19	R4662974
Molybdenum (Mo)-Dissolved	0.00263		0.000050	mg/L	09-JUN-19	10-JUN-19	R4662974
Nickel (Ni)-Dissolved	0.00059		0.00050	mg/L	09-JUN-19	10-JUN-19	R4662974
Potassium (K)-Dissolved	0.958		0.050	mg/L	09-JUN-19	10-JUN-19	R4662974
Selenium (Se)-Dissolved	83.3		0.050	ug/L	09-JUN-19	10-JUN-19	R4662974
Silicon (Si)-Dissolved	2.61		0.050	mg/L	09-JUN-19	10-JUN-19	R4662974
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-19	10-JUN-19	R4662974
Sodium (Na)-Dissolved	1.16		0.050	mg/L	09-JUN-19	10-JUN-19	R4662974
Strontium (Sr)-Dissolved	0.140		0.00020	mg/L	09-JUN-19	10-JUN-19	R4662974
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-19	10-JUN-19	R4662974
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-19	10-JUN-19	R4662974
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-19	10-JUN-19	R4662974
Uranium (U)-Dissolved	0.00528		0.000010	mg/L	09-JUN-19	10-JUN-19	R4662974
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-19	10-JUN-19	R4662974
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	09-JUN-19	10-JUN-19	R4662974
<b>Hardness</b>							
Hardness (as CaCO3)	646		0.50	mg/L		11-JUN-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		11-JUN-19	R4663314
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		13-JUN-19	R4667590
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286925-1 GH_MW-PC_WG_2019-04-01_NP							
Sampled By: CLIENT on 05-JUN-19 @ 11:05							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.229		0.0030	mg/L		11-JUN-19	R4663314
Antimony (Sb)-Total	0.00010		0.00010	mg/L		11-JUN-19	R4663314
Arsenic (As)-Total	0.00037		0.00010	mg/L		11-JUN-19	R4663314
Barium (Ba)-Total	0.104		0.00010	mg/L		11-JUN-19	R4663314
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		11-JUN-19	R4663314
Boron (B)-Total	<0.010		0.010	mg/L		11-JUN-19	R4663314
Cadmium (Cd)-Total	0.0429		0.0050	ug/L		11-JUN-19	R4663314
Calcium (Ca)-Total	115		0.050	mg/L		11-JUN-19	R4663314
Chromium (Cr)-Total	0.00070		0.00010	mg/L		11-JUN-19	R4663314
Cobalt (Co)-Total	0.18		0.10	ug/L		11-JUN-19	R4663314
Copper (Cu)-Total	0.0899		0.00050	mg/L		11-JUN-19	R4663314
Iron (Fe)-Total	0.176		0.010	mg/L		11-JUN-19	R4663314
Lead (Pb)-Total	0.000168		0.000050	mg/L		11-JUN-19	R4663314
Lithium (Li)-Total	0.0078		0.0010	mg/L		11-JUN-19	R4663314
Magnesium (Mg)-Total	84.8		0.10	mg/L		11-JUN-19	R4663314
Manganese (Mn)-Total	0.00713		0.00010	mg/L		11-JUN-19	R4663314
Molybdenum (Mo)-Total	0.00295		0.000050	mg/L		11-JUN-19	R4663314
Nickel (Ni)-Total	0.00085		0.00050	mg/L		11-JUN-19	R4663314
Potassium (K)-Total	1.00		0.050	mg/L		11-JUN-19	R4663314
Selenium (Se)-Total	80.9		0.050	ug/L		11-JUN-19	R4663314
Silicon (Si)-Total	3.09		0.10	mg/L		11-JUN-19	R4663314
Silver (Ag)-Total	<0.000010		0.000010	mg/L		11-JUN-19	R4663314
Sodium (Na)-Total	1.19		0.050	mg/L		11-JUN-19	R4663314
Strontium (Sr)-Total	0.142		0.00020	mg/L		11-JUN-19	R4663314
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		11-JUN-19	R4663314
Tin (Sn)-Total	<0.00010		0.00010	mg/L		11-JUN-19	R4663314
Titanium (Ti)-Total	<0.010		0.010	mg/L		11-JUN-19	R4663314
Uranium (U)-Total	0.00527		0.000010	mg/L		11-JUN-19	R4663314
Vanadium (V)-Total	0.00066		0.00050	mg/L		11-JUN-19	R4663314
Zinc (Zn)-Total	0.0037		0.0030	mg/L		11-JUN-19	R4663314
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.2		1.0	mg/L		13-JUN-19	R4670146
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		17-JUN-19	R4670261
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		17-JUN-19	R4670261
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		17-JUN-19	R4670261
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		17-JUN-19	R4670261
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0130		0.0050	mg/L		13-JUN-19	R4670451
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1100		2.0	uS/cm		13-JUN-19	R4670261
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.39	DLHC	0.10	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.5			%		17-JUN-19	
Anion Sum	13.6			meq/L		17-JUN-19	
Cation Sum	13.0			meq/L		17-JUN-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286925-1 GH_MW-PC_WG_2019-04-01_NP Sampled By: CLIENT on 05-JUN-19 @ 11:05 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	95.2		-100	%		17-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	2.37	DLHC	0.025	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0062		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	363		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0164		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	452	DLHC	1.5	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	849	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.9		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	2.94		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.15		0.10	pH		17-JUN-19	R4670261
L2286925-2 GH_MW-PC_WG_2019-04-01_FB-HG Sampled By: CLIENT on 05-JUN-19 @ 11:05 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		12-JUN-19	R4665908

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

QTR\_GW\_2019-04-01

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670146</b>							
<b>WG3077278-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	13-JUN-19
<b>WG3077278-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	13-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670261</b>							
<b>WG3077603-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.4		%		85-115	13-JUN-19
<b>WG3077603-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662974</b>							
<b>WG3072093-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.3		%		80-120	10-JUN-19
<b>WG3072093-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-JUN-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663314</b>							
<b>WG3072887-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.5		%		80-120	11-JUN-19
<b>WG3072887-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	11-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668064</b>							
<b>WG3076175-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.6		%		80-120	12-JUN-19
<b>WG3076175-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4668064							
<b>WG3076175-6</b>	<b>LCS</b>							
Total Organic Carbon			112.9		%		80-120	12-JUN-19
<b>WG3076175-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-JUN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Chloride (Cl)			104.2		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4670261							
<b>WG3077603-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.6		%		90-110	13-JUN-19
<b>WG3077603-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Fluoride (F)			107.6		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4667590							
<b>WG3075820-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.3		%		80-120	13-JUN-19
<b>WG3075820-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	13-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4667590							
<b>WG3075861-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			100.1		%		80-120	13-JUN-19
<b>WG3075861-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	13-JUN-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4665908</b>							
<b>WG3075009-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			102.4		%		80-120	12-JUN-19
<b>WG3075009-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	12-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4662974</b>							
<b>WG3072093-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.8		%		80-120	10-JUN-19
Antimony (Sb)-Dissolved			98.8		%		80-120	10-JUN-19
Arsenic (As)-Dissolved			98.8		%		80-120	10-JUN-19
Barium (Ba)-Dissolved			96.7		%		80-120	10-JUN-19
Bismuth (Bi)-Dissolved			94.4		%		80-120	10-JUN-19
Boron (B)-Dissolved			96.6		%		80-120	10-JUN-19
Cadmium (Cd)-Dissolved			98.5		%		80-120	10-JUN-19
Calcium (Ca)-Dissolved			98.0		%		80-120	10-JUN-19
Chromium (Cr)-Dissolved			99.0		%		80-120	10-JUN-19
Cobalt (Co)-Dissolved			99.0		%		80-120	10-JUN-19
Copper (Cu)-Dissolved			96.7		%		80-120	10-JUN-19
Iron (Fe)-Dissolved			99.3		%		80-120	10-JUN-19
Lead (Pb)-Dissolved			93.7		%		80-120	10-JUN-19
Lithium (Li)-Dissolved			95.6		%		80-120	10-JUN-19
Magnesium (Mg)-Dissolved			102.8		%		80-120	10-JUN-19
Manganese (Mn)-Dissolved			99.9		%		80-120	10-JUN-19
Molybdenum (Mo)-Dissolved			106.8		%		80-120	10-JUN-19
Nickel (Ni)-Dissolved			98.5		%		80-120	10-JUN-19
Potassium (K)-Dissolved			99.4		%		80-120	10-JUN-19
Selenium (Se)-Dissolved			99.7		%		80-120	10-JUN-19
Silicon (Si)-Dissolved			100.3		%		60-140	10-JUN-19
Silver (Ag)-Dissolved			99.1		%		80-120	10-JUN-19
Sodium (Na)-Dissolved			99.2		%		80-120	10-JUN-19
Strontium (Sr)-Dissolved			102.1		%		80-120	10-JUN-19
Thallium (Tl)-Dissolved			94.7		%		80-120	10-JUN-19
Tin (Sn)-Dissolved			97.1		%		80-120	10-JUN-19
Titanium (Ti)-Dissolved			95.4		%		80-120	10-JUN-19
Uranium (U)-Dissolved			97.9		%		80-120	10-JUN-19



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662974</b>							
<b>WG3072093-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			99.7		%		80-120	10-JUN-19
Zinc (Zn)-Dissolved			94.4		%		80-120	10-JUN-19
<b>WG3072093-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUN-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663314</b>							
<b>WG3072887-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.4		%		80-120	11-JUN-19
Antimony (Sb)-Total			106.6		%		80-120	11-JUN-19
Arsenic (As)-Total			101.0		%		80-120	11-JUN-19
Barium (Ba)-Total			99.5		%		80-120	11-JUN-19
Bismuth (Bi)-Total			91.2		%		80-120	11-JUN-19
Boron (B)-Total			97.1		%		80-120	11-JUN-19
Cadmium (Cd)-Total			100.1		%		80-120	11-JUN-19
Calcium (Ca)-Total			99.97		%		80-120	11-JUN-19
Chromium (Cr)-Total			103.7		%		80-120	11-JUN-19
Cobalt (Co)-Total			101.6		%		80-120	11-JUN-19
Copper (Cu)-Total			101.8		%		80-120	11-JUN-19
Iron (Fe)-Total			103.8		%		80-120	11-JUN-19
Lead (Pb)-Total			98.0		%		80-120	11-JUN-19
Lithium (Li)-Total			100.3		%		80-120	11-JUN-19
Magnesium (Mg)-Total			102.9		%		80-120	11-JUN-19
Manganese (Mn)-Total			102.7		%		80-120	11-JUN-19
Molybdenum (Mo)-Total			105.1		%		80-120	11-JUN-19
Nickel (Ni)-Total			100.8		%		80-120	11-JUN-19
Potassium (K)-Total			103.1		%		80-120	11-JUN-19
Selenium (Se)-Total			101.4		%		80-120	11-JUN-19
Silicon (Si)-Total			103.1		%		80-120	11-JUN-19
Silver (Ag)-Total			103.0		%		80-120	11-JUN-19
Sodium (Na)-Total			103.0		%		80-120	11-JUN-19
Strontium (Sr)-Total			102.7		%		80-120	11-JUN-19
Thallium (Tl)-Total			94.3		%		80-120	11-JUN-19
Tin (Sn)-Total			100.6		%		80-120	11-JUN-19
Titanium (Ti)-Total			100.9		%		80-120	11-JUN-19
Uranium (U)-Total			99.6		%		80-120	11-JUN-19
Vanadium (V)-Total			103.3		%		80-120	11-JUN-19
Zinc (Zn)-Total			98.8		%		80-120	11-JUN-19
<b>WG3072887-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	11-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	11-JUN-19



## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4663314</b>							
<b>WG3072887-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	11-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	11-JUN-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	11-JUN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	11-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	11-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	11-JUN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	11-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	11-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	11-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	11-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	11-JUN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	11-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	11-JUN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	11-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	11-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	11-JUN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	11-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	11-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	11-JUN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	11-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	11-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	11-JUN-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4670451</b>							
<b>WG3077545-6</b>	<b>LCS</b>							
Ammonia as N			98.9		%		85-115	13-JUN-19
<b>WG3077545-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrite (as N)			106.4		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrate (as N)			104.7		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4667329							
<b>WG3075443-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	12-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4663807							
<b>WG3074075-12</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.1		%		80-120	11-JUN-19
<b>WG3074075-11</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4670261							
<b>WG3077603-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	13-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4661287							
<b>WG3070124-66</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	06-JUN-19
<b>WG3070124-6</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Sulfate (SO4)			105.8		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4671467							
<b>WG3079095-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4665072							
<b>WG3073472-11 LCS</b>								
Total Suspended Solids			94.1		%		85-115	11-JUN-19
<b>WG3073472-10 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	11-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4661885							
<b>WG3071389-24 DUP</b>		<b>L2286925-1</b>						
Turbidity		2.94	2.82		NTU	4.2	15	07-JUN-19
<b>WG3071389-23 LCS</b>								
Turbidity			96.5		%		85-115	07-JUN-19
<b>WG3071389-22 MB</b>								
Turbidity			<0.10		NTU		0.1	07-JUN-19

# Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2286925

Report Date: 18-JUN-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	05-JUN-19 11:05	12-JUN-19 11:20	0.25	168	hours	EHTR-FM
pH	1	05-JUN-19 11:05	17-JUN-19 10:00	0.25	287	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2286925 were received on 06-JUN-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

**COC ID:** QTR\_GW\_2019-04-01      **TURNAROUND TIME:**      **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	jennifer.kropp@teck.com		X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	DL-Equils-GHO-Field@teck.co		X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com				X
City	Elkford	Province	BC	City	Calgary	Province	AB	PO number	610013				
Postal Code	V0B1H0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada				
Phone Number	250-865-3048			Phone Number	403 407 1794								

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y		Y	N	N					
								H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3					
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA				
GH_MW-PC_WG_2019-04-01_NP	GH_MW-PC	WG		2019/06/05	11:05	G	8	1	1	1	1	1	1	1	1				
GH_MW-PC_WG_2019-04-01_FB-HG	GH_MW-PC	WG		2019/06/05	11:05	G	1								1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	6/6/19

<b>SERVICE REQUEST (rush subject to availability)</b>		<b>Sampler's Name</b>		<b>Mobile #</b>	
Regular (default) X	Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS				
		<b>Sampler's Signature</b>		<b>Date/Time</b>	
				7	





SNC-Lavalin Inc.  
ATTN: Katrina Cheung  
8648 COMMERCE COURT  
BURNABY BC V5A 4N6

Date Received: 20-APR-19  
Report Date: 01-MAY-19 16:00 (MT)  
Version: FINAL

Client Phone: 604-515-5151

## Certificate of Analysis

Lab Work Order #: L2260740  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2260740-1 WATER 18-APR-19 10:35 GH_MW-MC- 1D_04-18-2019	L2260740-2 WATER 18-APR-19 12:15 GH_MW-MC- 1S_04-18-2019	L2260740-3 WATER 18-APR-19 13:45 GH_MW-MC- 2D_04-18-2019	L2260740-4 WATER 18-APR-19 16:50 GH_MW-MC- 2S_04-18-2019	L2260740-5 WATER 19-APR-19 09:15 GH_MW-WILLOW- 1D_04-19-2019
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	356	321	1950	620	456
	Hardness (as CaCO3) (mg/L)	121	162	19.7	309	127
	pH (pH)	8.30	8.18	9.04	8.05	8.38
	ORP (mV)	312	282	147	416	444
	Total Suspended Solids (mg/L)	7.7	<1.0	18.8	<1.0	24.5
	Total Dissolved Solids (mg/L)	194 <sup>DLHC</sup>	182 <sup>DLHC</sup>	1150 <sup>DLHC</sup>	381 <sup>DLHC</sup>	265 <sup>DLHC</sup>
	Turbidity (NTU)	6.59	0.39	47.8	1.19	41.8
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	216	179	477	276	256
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	108	<1.0	7.6
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	216	179	584	276	264
	Ammonia as N (mg/L)	0.0086	0.0359	0.593 <sup>DLHC</sup>	0.0095	0.0793
	Bromide (Br) (mg/L)	0.062	<0.050	0.80 <sup>DLHC</sup>	<0.050	<0.050
	Chloride (Cl) (mg/L)	10.6	<0.50	269 <sup>DLHC</sup>	3.04	8.31
	Fluoride (F) (mg/L)	0.797	0.159	3.32 <sup>DLHC</sup>	0.158	1.06
	Ion Balance (%)	82.7	80.2	103	90.5	92.9
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	0.169	<0.025 <sup>DLHC</sup>	1.30	<0.0051
	Nitrate (as N) (mg/L)	<0.0050	0.169	<0.025 <sup>DLHC</sup>	1.30	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>	0.0029	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.053	0.68 <sup>DLM</sup>	0.278	0.152
	Total Nitrogen (mg/L)	<0.050	0.222	0.68 <sup>DLHC</sup>	1.58	0.152
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0020	0.568 <sup>DLHC</sup>	0.0081	0.0020
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.616 <sup>DLHC</sup>	0.0078	0.0263
	Sulfate (SO4) (mg/L)	1.80	26.1	35.8 <sup>DLHC</sup>	85.1	9.09
	Anion Sum (meq/L)	4.70	4.14	20.2	7.47	5.75
	Cation Sum (meq/L)	3.88	3.32	20.7	6.75	5.34
Cation - Anion Balance (%)	-9.5	-11.0	1.3 <sup>DLM</sup>	-5.0	-3.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.35	0.65	5.9 <sup>DLM</sup>	2.83	2.31
	Total Organic Carbon (mg/L)	1.18	0.64	5.5 <sup>DLM</sup>	2.89	2.22
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
		LAB				
	Aluminum (Al)-Dissolved (mg/L)	0.0060	0.0034	0.0418 <sup>DLDS</sup>	0.0034	0.0036
	Antimony (Sb)-Dissolved (mg/L)	0.00011	<0.00010	0.00095 <sup>DLDS</sup>	0.00015	0.00015
Arsenic (As)-Dissolved (mg/L)	0.00044	<0.00010	0.0185 <sup>DLDS</sup>	0.00027	0.00054	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2260740-6 WATER 17-APR-19 15:20 GH_MW-WILLOW- 2D_04-17-2019	L2260740-7 WATER 19-APR-19 11:05 GH_MW-WILLOW- 2S_04-19-2019	L2260740-8 WATER 19-APR-19 18:15 GH_MW-WILLOW- 3D_04-19-2019	L2260740-9 WATER 19-APR-19 16:05 GH_MW-WILLOW- 3S_04-19-2019	L2260740-10 WATER 19-APR-19 12:30 GH_MW-WOLF- 1D_04-19-2019	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	554	372	473	443	410
	Hardness (as CaCO3) (mg/L)	150	189	183	232	192
	pH (pH)	8.22	8.26	8.30	8.19	8.34
	ORP (mV)	421	330	278	468	267
	Total Suspended Solids (mg/L)	978	8.1	15.3	25.7	88.6
	Total Dissolved Solids (mg/L)	326 <sup>DLHC</sup>	215 <sup>DLHC</sup>	275 <sup>DLHC</sup>	254 <sup>DLHC</sup>	241 <sup>DLHC</sup>
	Turbidity (NTU)	2290	15.7	25.3	35.4	70.2
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	373	220	279	255	243
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	4.6	<1.0	7.4
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	373	220	284	255	250
	Ammonia as N (mg/L)	0.109	0.0081	0.207	0.0056	0.124
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	8.74	<0.50	1.42	0.62	0.70
	Fluoride (F) (mg/L)	0.754	0.167	0.721	0.155	0.399
	Ion Balance (%)	79.7	86.0	87.5	87.9	85.3
	Nitrate and Nitrite (as N) (mg/L)	0.0778	0.166	<0.0051	0.103	<0.0051
	Nitrate (as N) (mg/L)	0.0778	0.166	<0.0050	0.103	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.31	0.183	0.312	0.124	0.322
	Total Nitrogen (mg/L)	1.38	0.349	0.312	0.227	0.322
	Orthophosphate-Dissolved (as P) (mg/L)	0.0096	0.0125	0.0068	0.0074	0.0088
	Phosphorus (P)-Total (mg/L)	1.25 <sup>DLHC</sup>	0.0199	0.0357	0.0367	0.189 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	17.0	13.1	13.9	18.3	12.7
	Anion Sum (meq/L)	8.10	4.68	6.04	5.50	5.31
	Cation Sum (meq/L)	6.45	4.03	5.28	4.84	4.53
	Cation - Anion Balance (%)	-11.3	-7.5	-6.7	-6.4	-7.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<10 <sup>DLM</sup>	4.06	2.83	2.58	3.0 <sup>DLM</sup>
	Total Organic Carbon (mg/L)	<10 <sup>DLM</sup>	4.23	2.60	4.12	<5.0 <sup>DLM</sup>
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0039	0.0049	0.0027	0.0029	0.0038
	Antimony (Sb)-Dissolved (mg/L)	0.00024	0.00010	<0.00010	0.00011	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00060	0.00037	0.00230	0.00020	0.00125

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2260740-11	L2260740-12	L2260740-13	L2260740-14	L2260740-15
					WATER	WATER	WATER	WATER	WATER
		19-APR-19	18-APR-19	18-APR-19	19-APR-19	18-APR-19	18-APR-19	19-APR-19	19-APR-19
		15:05	10:35	10:45	15:05	10:35	10:45	18:20	09:30
		GH_MW-WOLF-2D_04-19-2019	GH_MW-MC-1C_04-18-2019	GH_MW-19-A_04-18-2019	GH_MW-WOLF-2D_04-19-2019	GH_MW-MC-1C_04-18-2019	GH_MW-19-A_04-18-2019	GH_MW-19-B_04-19-2019	GH_MW-WILLOW-1C_04-19-2019
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	807	341	<2.0	<2.0	435			
	Hardness (as CaCO3) (mg/L)	364	121	<0.50	<0.50	129			
	pH (pH)	8.07	8.16	5.10	5.03	8.29			
	ORP (mV)	301	275	494	498	270			
	Total Suspended Solids (mg/L)	18.1	6.7	<1.0	<1.0	26.7			
	Total Dissolved Solids (mg/L)	568 <sup>DLHC</sup>	191 <sup>DLHC</sup>	<10	<10	265 <sup>DLHC</sup>			
	Turbidity (NTU)	23.5	6.55	0.30	0.27	40.9			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.9	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	310	191	<1.0	<1.0	250			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	310	191	<1.0	<1.0	250			
	Ammonia as N (mg/L)	0.0363	<0.0050 <sup>DLM</sup>	<0.0050	<0.0050	0.103			
	Bromide (Br) (mg/L)	0.628	<0.50	<0.050	<0.050	<0.050			
	Chloride (Cl) (mg/L)	13.7	10.6	<0.50	<0.50	8.31			
	Fluoride (F) (mg/L)	0.337	0.781	<0.020	<0.020	1.05			
	Ion Balance (%)	95.7	91.9	0.0	0.0	95.5			
	Nitrate and Nitrite (as N) (mg/L)	0.0120	<0.051	<0.0051	<0.0051	<0.0051			
	Nitrate (as N) (mg/L)	0.0079	<0.050 <sup>HTD</sup>	<0.0050	<0.0050	<0.0050			
	Nitrite (as N) (mg/L)	0.0041	<0.010 <sup>HTD</sup>	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.260	<0.050	<0.050	<0.050	0.319			
	Total Nitrogen (mg/L)	0.272	<0.071	<0.050	<0.050	0.319			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0101	<0.0010	<0.0010	<0.0010	0.0020			
	Phosphorus (P)-Total (mg/L)	0.0335	0.0025	<0.0020	<0.0020	0.0714			
	Sulfate (SO4) (mg/L)	162	1.73	<0.30	<0.30	9.07			
	Anion Sum (meq/L)	9.96	4.19	<0.10	<0.10	5.48			
	Cation Sum (meq/L)	9.54	3.85	<0.10	<0.10	5.23			
	Cation - Anion Balance (%)	-2.2	-4.2	0.0	0.0	-2.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	22.9	1.27	<0.50	0.64	1.75			
	Total Organic Carbon (mg/L)	23.8	1.84	<0.50	0.60	2.73			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0024	0.0055	<0.0010	<0.0010	0.0027			
	Antimony (Sb)-Dissolved (mg/L)	0.00027	<0.00010	<0.00010	<0.00010	0.00014			
	Arsenic (As)-Dissolved (mg/L)	0.00198	0.00047	<0.00010	<0.00010	0.00051			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2260740-1 WATER 18-APR-19 10:35 GH_MW-MC- 1D_04-18-2019	L2260740-2 WATER 18-APR-19 12:15 GH_MW-MC- 1S_04-18-2019	L2260740-3 WATER 18-APR-19 13:45 GH_MW-MC- 2D_04-18-2019	L2260740-4 WATER 18-APR-19 16:50 GH_MW-MC- 2S_04-18-2019	L2260740-5 WATER 19-APR-19 09:15 GH_MW-WILLOW- 1D_04-19-2019	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.546	0.0550	0.0651 <sup>DLDS</sup>	0.105	1.55 <sup>RRV</sup>
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.069	<0.010	0.726 <sup>DLDS</sup>	0.031	0.176
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.000025 <sup>DLDS</sup>	0.0000391	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	26.2	45.8	3.72 <sup>DLDS</sup>	80.3	25.4
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00027	<0.00050 <sup>DLDS</sup>	0.00027	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	0.00013	0.00035
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00028	<0.0010 <sup>DLDS</sup>	0.00056	0.00028
	Iron (Fe)-Dissolved (mg/L)	0.061	<0.010	<0.050 <sup>DLDS</sup>	<0.010	0.247
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0614	0.0022	1.02 <sup>DLDS</sup>	0.0246	0.0962
	Magnesium (Mg)-Dissolved (mg/L)	13.4	11.8	2.39 <sup>DLDS</sup>	25.3	14.9
	Manganese (Mn)-Dissolved (mg/L)	0.152	0.00056	0.0353 <sup>DLDS</sup>	0.0225	0.0549
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00668	0.000996	0.00427 <sup>DLDS</sup>	0.00136	0.00432
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	0.00130	0.00213
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.64 <sup>DLDS</sup>	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.26	0.34	2.26 <sup>DLDS</sup>	1.38	1.01
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00152	0.0189 <sup>DLDS</sup>	0.00499	0.000188
	Silicon (Si)-Dissolved (mg/L)	3.50	1.71	3.51 <sup>DLDS</sup>	3.92	3.00
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	33.0	1.26	465 <sup>DLDS</sup>	14.3	64.6
	Strontium (Sr)-Dissolved (mg/L)	0.393	0.210	0.138 <sup>DLDS</sup>	0.278	0.594
	Sulfur (S)-Dissolved (mg/L)	<1.0	8.7	1030 <sup>DLDS</sup>	28.8	3.3
	Thallium (Tl)-Dissolved (mg/L)	0.000027	<0.000010	<0.000050 <sup>DLDS</sup>	0.000015	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00063	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000171	0.000733	0.00152 <sup>DLDS</sup>	0.00119	0.000287
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0022	0.0021	<0.0050 <sup>DLDS</sup>	0.0019	0.0090
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	0.00106 <sup>DLDS</sup>	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2260740-6 WATER 17-APR-19 15:20 GH_MW-WILLOW- 2D_04-17-2019	L2260740-7 WATER 19-APR-19 11:05 GH_MW-WILLOW- 2S_04-19-2019	L2260740-8 WATER 19-APR-19 18:15 GH_MW-WILLOW- 3D_04-19-2019	L2260740-9 WATER 19-APR-19 16:05 GH_MW-WILLOW- 3S_04-19-2019	L2260740-10 WATER 19-APR-19 12:30 GH_MW-WOLF- 1D_04-19-2019
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Barium (Ba)-Dissolved (mg/L)	0.394	0.104	0.393	0.194	0.147
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.185	0.013	0.118	0.011	0.117
Cadmium (Cd)-Dissolved (mg/L)	0.0000146	0.0000110	<0.0000050	0.0000284	0.0000078
Calcium (Ca)-Dissolved (mg/L)	34.9	47.7	39.8	57.6	43.5
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
Cobalt (Co)-Dissolved (mg/L)	0.00015	<0.00010	0.00076	<0.00010	0.00034
Copper (Cu)-Dissolved (mg/L)	0.00036	0.00083	<0.00020	0.00036	<0.00020
Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.525	<0.010	0.141
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.149	0.0088	0.0663	0.0074	0.0361
Magnesium (Mg)-Dissolved (mg/L)	14.6	17.0	20.2	21.2	20.4
Manganese (Mn)-Dissolved (mg/L)	0.0249	0.00048	0.407	0.00306	0.271
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00291	0.000817	0.00570	0.000656	0.00302
Nickel (Ni)-Dissolved (mg/L)	0.00080	0.00063	0.00069	0.00098	0.00132
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	1.89	0.99	1.81	0.95	2.07
Selenium (Se)-Dissolved (mg/L)	0.000888	0.00161	0.000077	0.00110	0.000068
Silicon (Si)-Dissolved (mg/L)	3.28	3.15	4.45	3.85	4.99
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	79.5	5.16	35.2	4.51	13.7
Strontium (Sr)-Dissolved (mg/L)	0.262	0.136	0.568	0.141	0.848
Sulfur (S)-Dissolved (mg/L)	5.2	4.5	5.2	6.3	4.4
Thallium (Tl)-Dissolved (mg/L)	0.000026	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.00190	0.000565	0.00257	0.000484	0.000782
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0011	0.0019	0.0011	0.0203	0.0042
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2260740-11	L2260740-12	L2260740-13	L2260740-14	L2260740-15
					L2260740-11 WATER 19-APR-19 15:05 GH_MW-WOLF- 2D_04-19-2019	L2260740-12 WATER 18-APR-19 10:35 GH_MW-MC- 1C_04-18-2019	L2260740-13 WATER 18-APR-19 10:45 GH_MW-19-A_04- 18-2019	L2260740-14 WATER 19-APR-19 18:20 GH_MW-19-B_04- 19-2019	L2260740-15 WATER 19-APR-19 09:30 GH_MW-WILLOW- 1C_04-19-2019
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0985	0.529	<0.00010	<0.00010	1.46			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.058	0.072	<0.010	<0.010	0.178			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000174	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	92.1	26.1	<0.050	<0.050	28.8			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00158	<0.00010	<0.00010	<0.00010	0.00031			
	Copper (Cu)-Dissolved (mg/L)	0.00023	<0.00020	<0.00020	<0.00020	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	0.128	0.062	<0.010	<0.010	0.226			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0148	0.0600	<0.0010	<0.0010	0.0986			
	Magnesium (Mg)-Dissolved (mg/L)	33.5	13.5	<0.10	<0.10	15.1			
	Manganese (Mn)-Dissolved (mg/L)	0.844	0.152	<0.00010	<0.00010	0.0539			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00360	0.00656	<0.000050	<0.000050	0.00397			
	Nickel (Ni)-Dissolved (mg/L)	0.00312	<0.00050	<0.00050	<0.00050	0.00217			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	3.50	1.25	<0.10	<0.10	0.97			
	Selenium (Se)-Dissolved (mg/L)	0.000258	<0.000050	<0.000050	<0.000050	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	5.51	3.50	<0.050	<0.050	3.03			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	47.3	32.0	<0.050	<0.050	57.7			
	Strontium (Sr)-Dissolved (mg/L)	0.549	0.393	<0.00020	<0.00020	0.564			
	Sulfur (S)-Dissolved (mg/L)	54.2	<1.0	<1.0	<1.0	3.2			
	Thallium (Tl)-Dissolved (mg/L)	0.000028	0.000024	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00056	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00380	0.000186	<0.000010	<0.000010	0.000302			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0031	0.0023	<0.0010	<0.0010	0.0085			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Fluoride (F)	MS-B	L2260740-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -7, -8, -9
Matrix Spike	Ammonia as N	MS-B	L2260740-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L2260740-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -7, -8, -9
Method Blank	Total Suspended Solids	RRQC	L2260740-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9
<b>Comments:</b> MB negative due to loss of weight from torn filter paper, all other filters intact and QCs within DQO.			

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRQC	Refer to report remarks for information regarding this QC result.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-CL** Water Hardness APHA 2340 B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-DIS-ICP-CL** Water Dissolved Metals by ICPOES APHA 3030B/EPA 6010D

"This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (APHA Method 3030B) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 1 of 16

Client: SNC-Lavalin Inc.  
 8648 COMMERCE COURT  
 BURNABY BC V5A 4N6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch R4615267								
<b>WG3036924-9</b>	<b>DUP</b>	<b>L2260740-5</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	25-APR-19
<b>WG3036924-5</b>	<b>LCS</b>		109.4		%		85-115	25-APR-19
Acidity (as CaCO3)								
<b>WG3036924-8</b>	<b>LCS</b>		104.4		%		85-115	25-APR-19
Acidity (as CaCO3)								
<b>WG3036924-4</b>	<b>MB</b>		1.3		mg/L		2	25-APR-19
Acidity (as CaCO3)								
<b>WG3036924-7</b>	<b>MB</b>		<1.0		mg/L		2	25-APR-19
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch R4612235								
<b>WG3034710-12</b>	<b>DUP</b>	<b>L2260740-10</b>						
Alkalinity, Total (as CaCO3)		250	250		mg/L	0.3	20	24-APR-19
<b>WG3034710-11</b>	<b>LCS</b>		103.5		%		85-115	24-APR-19
Alkalinity, Total (as CaCO3)								
<b>WG3034710-8</b>	<b>LCS</b>		105.0		%		85-115	24-APR-19
Alkalinity, Total (as CaCO3)								
<b>WG3034710-10</b>	<b>MB</b>		<1.0		mg/L		1	24-APR-19
Alkalinity, Total (as CaCO3)								
<b>WG3034710-7</b>	<b>MB</b>		<1.0		mg/L		1	24-APR-19
Alkalinity, Total (as CaCO3)								
Batch R4613134								
<b>WG3035489-2</b>	<b>LCS</b>		102.9		%		85-115	25-APR-19
Alkalinity, Total (as CaCO3)								
<b>WG3035489-1</b>	<b>MB</b>		<1.0		mg/L		1	25-APR-19
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>		<b>Water</b>						
Batch R4612386								
<b>WG3034900-3</b>	<b>DUP</b>	<b>L2260740-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	25-APR-19
<b>WG3034900-2</b>	<b>LCS</b>	<b>TMRM</b>	98.7		%		80-120	25-APR-19
Beryllium (Be)-Dissolved								
<b>WG3034900-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	25-APR-19
Beryllium (Be)-Dissolved								
<b>WG3034900-4</b>	<b>MS</b>	<b>L2260740-14</b>	115.4		%		70-130	25-APR-19
Beryllium (Be)-Dissolved								
<b>BR-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Bromide (Br)			98.7		%		85-115	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-APR-19
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Bromide (Br)			100.7		%		85-115	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							
Bromide (Br)			102.9		%		85-115	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Bromide (Br)			109.1		%		75-125	20-APR-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4613966</b>							
<b>WG3035766-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.1		%		80-120	25-APR-19
<b>WG3035766-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-APR-19
<b>Batch</b>	<b>R4614450</b>							
<b>WG3036254-7</b>	<b>DUP</b>	<b>L2260740-9</b>						
Dissolved Organic Carbon		2.58	2.64		mg/L	2.1	20	26-APR-19
<b>WG3036254-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			110.3		%		80-120	26-APR-19
<b>WG3036254-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			111.6		%		80-120	26-APR-19
<b>WG3036254-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-APR-19
<b>WG3036254-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-APR-19
<b>WG3036254-8</b>	<b>MS</b>	<b>L2260740-7</b>						
Dissolved Organic Carbon			101.3		%		70-130	26-APR-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4613966</b>							
<b>WG3035766-2</b>	<b>LCS</b>							
Total Organic Carbon			103.9		%		80-120	25-APR-19
<b>WG3035766-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-APR-19
<b>Batch</b>	<b>R4614450</b>							
<b>WG3036254-7</b>	<b>DUP</b>	<b>L2260740-9</b>						
Total Organic Carbon		4.12	3.62		mg/L	13	20	26-APR-19
<b>WG3036254-2</b>	<b>LCS</b>							
Total Organic Carbon			111.6		%		80-120	26-APR-19
<b>WG3036254-6</b>	<b>LCS</b>							
Total Organic Carbon			117.4		%		80-120	26-APR-19
<b>WG3036254-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-APR-19
<b>WG3036254-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-APR-19
<b>WG3036254-8</b>	<b>MS</b>	<b>L2260740-7</b>						
Total Organic Carbon			103.3		%		70-130	26-APR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Chloride (Cl)			100.3		%		90-110	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-APR-19
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Chloride (Cl)		8.31	8.29		mg/L	0.1	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							
Chloride (Cl)			101.1		%		90-110	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Chloride (Cl)			105.9		%		75-125	20-APR-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4612235</b>							
<b>WG3034710-12</b>	<b>DUP</b>	<b>L2260740-10</b>						
Conductivity (@ 25C)		410	407		uS/cm	0.7	10	24-APR-19
<b>WG3034710-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.5		%		90-110	24-APR-19
<b>WG3034710-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.9		%		90-110	24-APR-19
<b>WG3034710-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-APR-19
<b>WG3034710-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-APR-19
<b>Batch</b>	<b>R4613134</b>							
<b>WG3035489-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.1		%		90-110	25-APR-19
<b>WG3035489-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-APR-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Fluoride (F)			102.2		%		90-110	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-APR-19
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Fluoride (F)		1.05	1.04		mg/L	1.0	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Fluoride (F)			106.1		%		90-110	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							
Fluoride (F)			106.4		%		90-110	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Fluoride (F)			N/A	MS-B	%		-	20-APR-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4615066</b>							
<b>WG3036863-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.0		%		80-120	28-APR-19
<b>WG3036863-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.00005C		mg/L		0.000005	28-APR-19
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4612386</b>							
<b>WG3034900-3</b>	<b>DUP</b>	<b>L2260740-1</b>						
Aluminum (Al)-Dissolved		0.0060	0.0057		mg/L	5.9	20	25-APR-19
Antimony (Sb)-Dissolved		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	25-APR-19
Arsenic (As)-Dissolved		0.00044	0.00044		mg/L	2.0	20	25-APR-19
Barium (Ba)-Dissolved		0.546	0.543		mg/L	0.5	20	25-APR-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-APR-19
Boron (B)-Dissolved		0.069	0.069		mg/L	0.4	20	25-APR-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	25-APR-19
Calcium (Ca)-Dissolved		26.2	26.5		mg/L	1.3	20	25-APR-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-APR-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-APR-19
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-APR-19
Iron (Fe)-Dissolved		0.061	0.061		mg/L	1.0	20	25-APR-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-APR-19
Lithium (Li)-Dissolved		0.0614	0.0586		mg/L	4.7	20	25-APR-19
Manganese (Mn)-Dissolved		0.152	0.152		mg/L	0.1	20	25-APR-19
Molybdenum (Mo)-Dissolved		0.00668	0.00648		mg/L	3.1	20	25-APR-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-APR-19
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-APR-19
Potassium (K)-Dissolved		1.26	1.26		mg/L	0.3	20	25-APR-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-APR-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	25-APR-19
Sodium (Na)-Dissolved		33.0	32.9		mg/L	0.2	20	25-APR-19
Strontium (Sr)-Dissolved		0.393	0.385		mg/L	2.2	20	25-APR-19
Thallium (Tl)-Dissolved		0.000027	0.000026		mg/L	3.5	20	25-APR-19
Tin (Sn)-Dissolved		0.00063	0.00055		mg/L	13	20	25-APR-19
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-APR-19
Uranium (U)-Dissolved		0.000171	0.000178		mg/L	3.8	20	25-APR-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-APR-19



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4612386</b>							
<b>WG3034900-3</b>	<b>DUP</b>	<b>L2260740-1</b>						
Zinc (Zn)-Dissolved		0.0022	0.0021		mg/L	3.1	20	25-APR-19
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	25-APR-19
<b>WG3034900-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			101.5		%		80-120	25-APR-19
Antimony (Sb)-Dissolved			103.1		%		80-120	25-APR-19
Arsenic (As)-Dissolved			97.8		%		80-120	25-APR-19
Barium (Ba)-Dissolved			99.96		%		80-120	25-APR-19
Bismuth (Bi)-Dissolved			97.7		%		80-120	25-APR-19
Boron (B)-Dissolved			92.4		%		80-120	25-APR-19
Cadmium (Cd)-Dissolved			96.9		%		80-120	25-APR-19
Calcium (Ca)-Dissolved			95.8		%		80-120	25-APR-19
Chromium (Cr)-Dissolved			99.8		%		80-120	25-APR-19
Cobalt (Co)-Dissolved			97.0		%		80-120	25-APR-19
Copper (Cu)-Dissolved			95.7		%		80-120	25-APR-19
Iron (Fe)-Dissolved			113.6		%		80-120	25-APR-19
Lead (Pb)-Dissolved			96.9		%		80-120	25-APR-19
Lithium (Li)-Dissolved			104.8		%		80-120	25-APR-19
Manganese (Mn)-Dissolved			98.2		%		80-120	25-APR-19
Molybdenum (Mo)-Dissolved			100.2		%		80-120	25-APR-19
Nickel (Ni)-Dissolved			96.4		%		80-120	25-APR-19
Phosphorus (P)-Dissolved			96.1		%		70-130	25-APR-19
Potassium (K)-Dissolved			101.7		%		80-120	25-APR-19
Selenium (Se)-Dissolved			93.4		%		80-120	25-APR-19
Silver (Ag)-Dissolved			92.8		%		80-120	25-APR-19
Sodium (Na)-Dissolved			101.9		%		80-120	25-APR-19
Strontium (Sr)-Dissolved			100.7		%		80-120	25-APR-19
Thallium (Tl)-Dissolved			95.9		%		80-120	25-APR-19
Tin (Sn)-Dissolved			98.8		%		80-120	25-APR-19
Titanium (Ti)-Dissolved			90.3		%		80-120	25-APR-19
Uranium (U)-Dissolved			92.8		%		80-120	25-APR-19
Vanadium (V)-Dissolved			98.8		%		80-120	25-APR-19
Zinc (Zn)-Dissolved			94.0		%		80-120	25-APR-19
Zirconium (Zr)-Dissolved			98.9		%		80-120	25-APR-19
<b>WG3034900-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-APR-19



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4612386</b>							
<b>WG3034900-1</b>	<b>MB</b>							
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-APR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-APR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-APR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-APR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-APR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-APR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-APR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-APR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-APR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-APR-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	25-APR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-APR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-APR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-APR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-APR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-APR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-APR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-APR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-APR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-APR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-APR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-APR-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	25-APR-19
<b>WG3034900-4</b>	<b>MS</b>	<b>L2260740-14</b>						
Aluminum (Al)-Dissolved			113.7		%		70-130	25-APR-19
Antimony (Sb)-Dissolved			117.0		%		70-130	25-APR-19
Arsenic (As)-Dissolved			112.8		%		70-130	25-APR-19
Barium (Ba)-Dissolved			116.6		%		70-130	25-APR-19



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4612386</b>							
<b>WG3034900-4</b>	<b>MS</b>	<b>L2260740-14</b>						
Bismuth (Bi)-Dissolved			109.9		%		70-130	25-APR-19
Boron (B)-Dissolved			103.9		%		70-130	25-APR-19
Cadmium (Cd)-Dissolved			114.2		%		70-130	25-APR-19
Calcium (Ca)-Dissolved			110.6		%		70-130	25-APR-19
Chromium (Cr)-Dissolved			109.1		%		70-130	25-APR-19
Cobalt (Co)-Dissolved			108.6		%		70-130	25-APR-19
Copper (Cu)-Dissolved			110.2		%		70-130	25-APR-19
Iron (Fe)-Dissolved			108.8		%		70-130	25-APR-19
Lead (Pb)-Dissolved			114.3		%		70-130	25-APR-19
Lithium (Li)-Dissolved			116.5		%		70-130	25-APR-19
Manganese (Mn)-Dissolved			107.5		%		70-130	25-APR-19
Molybdenum (Mo)-Dissolved			112.8		%		70-130	25-APR-19
Nickel (Ni)-Dissolved			108.7		%		70-130	25-APR-19
Phosphorus (P)-Dissolved			107.6		%		70-130	25-APR-19
Potassium (K)-Dissolved			110.9		%		70-130	25-APR-19
Selenium (Se)-Dissolved			107.6		%		70-130	25-APR-19
Silver (Ag)-Dissolved			109.1		%		70-130	25-APR-19
Sodium (Na)-Dissolved			113.6		%		70-130	25-APR-19
Strontium (Sr)-Dissolved			111.7		%		70-130	25-APR-19
Thallium (Tl)-Dissolved			106.6		%		70-130	25-APR-19
Tin (Sn)-Dissolved			112.5		%		70-130	25-APR-19
Titanium (Ti)-Dissolved			108.9		%		70-130	25-APR-19
Uranium (U)-Dissolved			106.5		%		70-130	25-APR-19
Vanadium (V)-Dissolved			108.8		%		70-130	25-APR-19
Zinc (Zn)-Dissolved			109.3		%		70-130	25-APR-19
Zirconium (Zr)-Dissolved			116.0		%		70-130	25-APR-19
<b>MET-DIS-ICP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4616231</b>							
<b>WG3037199-3</b>	<b>DUP</b>	<b>L2260740-1</b>						
Magnesium (Mg)-Dissolved		13.4	13.4		mg/L	0.2	20	29-APR-19
Silicon (Si)-Dissolved		3.50	3.51		mg/L	0.4	20	29-APR-19
Sulfur (S)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	29-APR-19
<b>WG3037199-2</b>	<b>LCS</b>	<b>TMRM</b>						
Magnesium (Mg)-Dissolved			96.4		%		80-120	29-APR-19





## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-DIS-ICP-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4616231</b>							
<b>WG3037199-2</b>	<b>LCS</b>	<b>TMRM</b>						
Silicon (Si)-Dissolved			98.9		%		80-120	29-APR-19
Sulfur (S)-Dissolved			99.2		%		80-120	29-APR-19
<b>WG3037199-1</b>	<b>MB</b>							
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	29-APR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-APR-19
Sulfur (S)-Dissolved			<1.0		mg/L		1	29-APR-19
<b>WG3037199-4</b>	<b>MS</b>	<b>L2260740-14</b>						
Magnesium (Mg)-Dissolved			94.7		%		70-130	29-APR-19
Sulfur (S)-Dissolved			97.5		%		70-130	29-APR-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4614456</b>							
<b>WG3036275-3</b>	<b>DUP</b>	<b>L2260740-10</b>						
Ammonia as N		0.124	0.125		mg/L	0.6	20	26-APR-19
<b>WG3036275-2</b>	<b>LCS</b>							
Ammonia as N			99.2		%		85-115	26-APR-19
<b>WG3036275-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-APR-19
<b>WG3036275-4</b>	<b>MS</b>	<b>L2260740-10</b>						
Ammonia as N			N/A	MS-B	%		-	26-APR-19
<b>Batch</b>	<b>R4614800</b>							
<b>WG3036475-2</b>	<b>LCS</b>							
Ammonia as N			96.7		%		85-115	27-APR-19
<b>WG3036475-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-APR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Nitrite (as N)			104.8		%		90-110	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-APR-19
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-6</b>	<b>LCS</b>							
Nitrite (as N)			105.7		%		90-110	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Nitrite (as N)			0.0010		mg/L		0.001	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Nitrite (as N)			110.3		%		75-125	20-APR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-APR-19
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							
Nitrate (as N)			100.9		%		90-110	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Nitrate (as N)			105.7		%		75-125	20-APR-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4611928</b>							
<b>WG3034396-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	24-APR-19
<b>WG3034396-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	24-APR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4614669</b>							
<b>WG3036523-5</b>	<b>LCS</b>							
Phosphorus (P)-Total			96.2		%		80-120	26-APR-19
<b>WG3036523-8</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4614669</b>							
<b>WG3036523-8</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.0		%		80-120	26-APR-19
<b>WG3036523-4</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-APR-19
<b>WG3036523-7</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-APR-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4612235</b>							
<b>WG3034710-12</b>	<b>DUP</b>	<b>L2260740-10</b>						
pH		8.34	8.35	J	pH	0.01	0.2	24-APR-19
<b>WG3034710-11</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	24-APR-19
<b>WG3034710-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	24-APR-19
<b>Batch</b>	<b>R4613134</b>							
<b>WG3035489-2</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	25-APR-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606062</b>							
<b>WG3031242-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			94.1		%		80-120	20-APR-19
<b>WG3031242-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.9		%		80-120	20-APR-19
<b>WG3031242-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-APR-19
<b>WG3031242-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-APR-19
<b>WG3031242-16</b>	<b>MS</b>	<b>L2260740-1</b>						
Orthophosphate-Dissolved (as P)			106.1		%		70-130	20-APR-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4606226</b>							
<b>WG3031398-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.4		%		90-110	20-APR-19
<b>WG3031398-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	20-APR-19



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4610132</b>							
<b>WG3032906-7</b>	<b>DUP</b>	<b>L2260740-15</b>						
Sulfate (SO4)		9.07	9.06		mg/L	0.1	20	20-APR-19
<b>WG3032906-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.2		%		90-110	20-APR-19
<b>WG3032906-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.5		%		90-110	20-APR-19
<b>WG3032906-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	20-APR-19
<b>WG3032906-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	20-APR-19
<b>WG3032906-8</b>	<b>MS</b>	<b>L2260740-15</b>						
Sulfate (SO4)			105.2		%		75-125	20-APR-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4611407</b>							
<b>WG3032475-12</b>	<b>DUP</b>	<b>L2260740-3</b>						
Total Dissolved Solids		1150	1140		mg/L	1.2	20	23-APR-19
<b>WG3032475-11</b>	<b>LCS</b>							
Total Dissolved Solids			96.9		%		85-115	23-APR-19
<b>WG3032475-14</b>	<b>LCS</b>							
Total Dissolved Solids			97.8		%		85-115	23-APR-19
<b>WG3032475-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-APR-19
<b>WG3032475-13</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-APR-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4614370</b>							
<b>WG3036091-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.3		%		75-125	26-APR-19
<b>WG3036091-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.1		%		75-125	26-APR-19
<b>WG3036091-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.6		%		75-125	26-APR-19
<b>WG3036091-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-APR-19
<b>WG3036091-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-APR-19
<b>WG3036091-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-APR-19



## Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4611406</b>							
<b>WG3032472-2</b>	<b>LCS</b>							
Total Suspended Solids			98.8		%		85-115	24-APR-19
<b>WG3032472-4</b>	<b>LCS</b>							
Total Suspended Solids			98.2		%		85-115	23-APR-19
<b>WG3032472-6</b>	<b>LCS</b>							
Total Suspended Solids			97.5		%		85-115	23-APR-19
<b>WG3032472-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-APR-19
<b>WG3032472-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-APR-19
<b>WG3032472-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0	RRQC	mg/L		1	23-APR-19

COMMENTS: MB negative due to loss of weight from torn filter paper, all other filters intact and QCs within DQO.

<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4609347</b>							
<b>WG3031215-18</b>	<b>DUP</b>	<b>L2260740-3</b>						
Turbidity		47.8	47.3		NTU	1.1	15	20-APR-19
<b>WG3031215-17</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	20-APR-19
<b>WG3031215-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	20-APR-19

# Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 14 of 16

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

---

# Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 15 of 16

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	18-APR-19 10:35	24-APR-19 10:10	0.25	144	hours	EHTR-FM
	2	18-APR-19 12:15	24-APR-19 10:10	0.25	142	hours	EHTR-FM
	3	18-APR-19 13:45	24-APR-19 10:10	0.25	140	hours	EHTR-FM
	4	18-APR-19 16:50	24-APR-19 10:10	0.25	137	hours	EHTR-FM
	5	19-APR-19 09:15	24-APR-19 10:10	0.25	121	hours	EHTR-FM
	6	17-APR-19 15:20	24-APR-19 10:10	0.25	163	hours	EHTR-FM
	7	19-APR-19 11:05	24-APR-19 10:10	0.25	119	hours	EHTR-FM
	8	19-APR-19 18:15	24-APR-19 10:10	0.25	112	hours	EHTR-FM
	9	19-APR-19 16:05	24-APR-19 10:10	0.25	114	hours	EHTR-FM
	10	19-APR-19 12:30	24-APR-19 10:10	0.25	118	hours	EHTR-FM
	11	19-APR-19 15:05	24-APR-19 10:10	0.25	115	hours	EHTR-FM
	12	18-APR-19 10:35	24-APR-19 10:10	0.25	144	hours	EHTR-FM
	13	18-APR-19 10:45	24-APR-19 10:10	0.25	144	hours	EHTR-FM
	14	19-APR-19 18:20	24-APR-19 10:10	0.25	112	hours	EHTR-FM
	15	19-APR-19 09:30	24-APR-19 10:10	0.25	121	hours	EHTR-FM

pH

	1	18-APR-19 10:35	24-APR-19 10:00	0.25	144	hours	EHTR-FM
	2	18-APR-19 12:15	24-APR-19 10:00	0.25	142	hours	EHTR-FM
	3	18-APR-19 13:45	24-APR-19 10:00	0.25	140	hours	EHTR-FM
	4	18-APR-19 16:50	24-APR-19 10:00	0.25	137	hours	EHTR-FM
	5	19-APR-19 09:15	24-APR-19 10:00	0.25	121	hours	EHTR-FM
	6	17-APR-19 15:20	24-APR-19 10:00	0.25	163	hours	EHTR-FM
	7	19-APR-19 11:05	24-APR-19 10:00	0.25	119	hours	EHTR-FM
	8	19-APR-19 18:15	24-APR-19 10:00	0.25	112	hours	EHTR-FM
	9	19-APR-19 16:05	24-APR-19 10:00	0.25	114	hours	EHTR-FM
	10	19-APR-19 12:30	24-APR-19 10:00	0.25	118	hours	EHTR-FM
	11	19-APR-19 15:05	25-APR-19 10:00	0.25	139	hours	EHTR-FM
	12	18-APR-19 10:35	25-APR-19 10:00	0.25	168	hours	EHTR-FM
	13	18-APR-19 10:45	25-APR-19 10:00	0.25	167	hours	EHTR-FM
	14	19-APR-19 18:20	25-APR-19 10:00	0.25	136	hours	EHTR-FM
	15	19-APR-19 09:30	25-APR-19 10:00	0.25	144	hours	EHTR-FM

**Anions and Nutrients**

Nitrate in Water by IC (Low Level)

	12	18-APR-19 10:35	23-APR-19 11:00	3	5	days	EHTL
--	----	-----------------	-----------------	---	---	------	------

Nitrite in Water by IC (Low Level)

	12	18-APR-19 10:35	23-APR-19 11:00	3	5	days	EHTL
--	----	-----------------	-----------------	---	---	------	------

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2260740 were received on 20-APR-19 11:41.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

# Quality Control Report

Workorder: L2260740

Report Date: 01-MAY-19

Page 16 of 16

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2260740-COFC

COC Number: 19 -

Page 1 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>				<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin - Burnaby		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> NO <input type="checkbox"/>				PRIORITY (Business Days)					EMERGENCY												
Phone: Tel.: 604-515-5151 x 129 Cell.:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				4 day [P4-20%] <input type="checkbox"/>					1 Business day [E1 - 100%] <input type="checkbox"/>												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				3 day [P3-25%] <input type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] <input type="checkbox"/>												
Street: 8648 Commerce Ct		Email 1 or Fax katrina.cheung@sncclavalin.com				Date and Time Required for all E&P TATs:																	
City/Province: Burnaby, BC		Email 2 vicky.lipinski@sncclavalin.com				For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code: V5A 4N6		Email 3 cam.jaeger@teck.com				<b>Analysis Request</b>																	
Invoice To Same as Report To <input checked="" type="checkbox"/> <input type="checkbox"/> NO		<b>Invoice Distribution</b>				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Copy of Invoice with Report <input type="checkbox"/> <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				F/P P F/P																	
Company:		Email 1 or Fax katrina.cheung@sncclavalin.com				DOC (C-DIS-ORG-LOW-CL)																	
Contact:		Email 2 payables@sncclavalin.com				TOC (C-TOT-ORG-LOW-CL)																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>				BC MDG D-Mel. + Hg (MET-D-BCMDG-CL)																	
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center:		PO#		Total N Calc. (N-T-CALC-CL)																	
Job #: 658004		Major/Minor Code:		Routing Code:		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
PO / AFE: 658004		Requisitioner:				Teck Routine (TECKCOAL-ROUTINE-CL)																	
LSD:		Location:				TKN (TKN-L-F-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1816		Sampler:		REPORTING CODES:																	
						Dissolved Boron in Water (CL-B-DIS-MS)																	
						Dissolved Bismuth in Water (CL-BIDIS-MS)																	
						Dissolved Ca in Water (CL-CA-OIS-COMS)																	
						SAMPLES ON HOLD																	
						Sample is hazardous (please provide further detail)																	
						NUMBER OF CONTAINERS																	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Mel. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	REPORTING CODES:	Dissolved Boron in Water (CL-B-DIS-MS)	Dissolved Bismuth in Water (CL-BIDIS-MS)	Dissolved Ca in Water (CL-CA-OIS-COMS)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS				
	GH_MW-MC-1S_04-17-2019_N_TR (example)	GH_MW-MC-1S (example)			Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-MC-1D_04-18-2019	GH_MW-MC-1D	18-04-19	10:35	Water	R	R	R	R	R	R	R		R	R	R			1				
	GH_MW-MC-1S_04-18-2019	GH_MW-MC-1S	18-04-19	12:15	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-MC-2D_04-18-2019	GH_MW-MC-2D	18-04-19	13:45	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-MC-2S_04-18-2019	GH_MW-MC-2S	18-04-19	16:50	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-willow-1D_04-19-2019	GH_MW-willow-1D	19-04-19	09:15	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-willow-2D_04-17-2019	GH_MW-willow-2D	17-04-19	15:20	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-willow-2S_04-19-2019	GH_MW-willow-2S	19-04-19	11:05	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-willow-3D_04-19-2019	GH_MW-willow-3D	19-04-19	18:15	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-willow-3S_04-19-2019	GH_MW-willow-3S	19-04-19	16:05	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-wolf-1D_04-19-2019	GH_MW-wolf-1D	19-04-19	12:30	Water	R	R	R	R	R	R	R		R	R	R							
	GH_MW-wolf-2D_04-19-2019	GH_MW-wolf-2D	19-04-19	15:05	Water	R	R	R	R	R	R	R		R	R	R							
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION    FRO-FORDING RIVER OPERATION    EVO-ELKVIEW OPERATIONS				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
						Cooling Initiated <input checked="" type="checkbox"/>																	
						INITIAL COOLER TEMPERATURES °C							FINAL COOLER TEMPERATURES °C										
						2 4 2																	
<b>SHIPMENT RELEASE (client use)</b>					<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>					<b>FINAL SHIPMENT RECEPTION (lab use only)</b>													
Released by: JOSE LAUNDAVERDE JML		Date: 19/04/20		Time: 11:30	Received by: [Signature]		Date: 4/20			Time: 11:41			Received by:			Date:				Time:			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY    YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



ALS Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2260740-COFC

COC Number: 19 -

Page 2 of 2

www.alsglobal.com

Report To		Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																					
Contact and company name below will appear on the final report		Select Report Format: <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																					
Company:	SNC-Lavalin ~Burnaby	Quality Control (QC) Report with Report <input checked="" type="checkbox"/> NO			PRIORITY (Business Days)	4 day [P4-20%]	<input type="checkbox"/>	EMERGENCY	1 Business day [E1 - 100%]											<input type="checkbox"/>						
Contact:	Katrina Cheung	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%]	<input type="checkbox"/>	Same Day, Weekend or Statutory holiday [E2 -200%]											<input type="checkbox"/>								
Phone:	Tel.:604-515-5151 x 129 Cell.:	Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-60%]	<input type="checkbox"/>	(Laboratory opening fees may apply)											<input type="checkbox"/>								
Company address below will appear on the final report		Email 1 or Fax katrina.cheung@sncclavalin.com			Date and Time Required for all E&P TATs:																					
Street:	8648 Commerce Ct	Email 2 vicky.lipinski@sncclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																					
City/Province:	Burnaby, BC	Email 3 cam.jaeger@teck.com			Analysis Request																					
Postal Code:	V5A 4N6				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																					
Invoice To	Same as Report To <input checked="" type="checkbox"/> NO	Invoice Distribution			F/P	P	F/P															SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS		
Copy of Invoice with Report <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Met. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	REPORTING CODES:			Dissolved Boron in Water (CL-B-DIS-MS)	Dissolved Bismuth in Water (CL-BI-DIS-MS)	Dissolved Ca in Water (CL-CA-DIS-CCMS)									
Company:		Email 1 or Fax katrina.cheung@sncclavalin.com																								
Contact:		Email 2 payables@sncclavalin.com																								
Project Information				Oil and Gas Required Fields (client use)																						
ALS Account # / Quote #:		MOR125 / Q72340	AFE/Cost Center:		PO#																					
Job #:		658004	Major/Minor Code:		Routing Code:																					
PO / AFE:		658004	Requisitioner:																							
LSD:		Location:																								
ALS Lab Work Order # (lab use only):				ALS Contact:		Sampler:																				
ALS Contact: Ryan Smyth 403-407-1816		Sampler:																								
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	REPORTING CODES:			Dissolved Boron	Dissolved Bismuth	Dissolved Ca					SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS	
	GH_MW-MC-1S_04-17-2019_N_TR (example)	GH_MW-MC-1S (example)			Water	R	R	R	R	R	R	R				R	R	R								
	GH_MW-MC-1C_04-18-2019	GH_MW-MC-1C	18-04-19	10:35	Water	R	R	R	R	R	R	R				R	R	R								
	GH_MW19-A_04-18-2019	GH_MW19-A	18-04-19	10:45	Water	R	R	R	R	R	R	R				R	R	R								
	GH_MW19-B_04-18-2019	GH_MW19-B	18-04-19	10:20	Water	R	R	R	R	R	R	R				R	R	R								
	GH_MW-Willow-1C_04-19-2019	GH_MW-Willow-1C	19-04-19	09:30	Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								
					Water	R	R	R	R	R	R	R				R	R	R								

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 27-JUN-19  
Report Date: 21-NOV-19 18:17 (MT)  
Version: FINAL REV. 2

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2300711  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Comments: 21-NOV-2019 - Sample ID corrected for MC10-series.

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2300711-1 Water 26-JUN-19 12:30 GH_MW-MC- 1S_WG_2019-06- 26_NP	L2300711-2 Water 26-JUN-19 08:50 GH_MW-MC- 2S_WG_2019-06- 26_NP	L2300711-3 Water 26-JUN-19 11:10 GH_MW-MC- 2D_WG_2019-06- 26_NP	L2300711-4 Water 26-JUN-19 15:05 GH_MW-WILLOW- 2S_WG_2019-06- 26_NP	L2300711-5 Water 26-JUN-19 15:30 GH_MW_MC10- A_WG_2019-06- 26_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	296	588	2070	367	365
	Hardness (as CaCO3) (mg/L)	155	304	17.3	195	195
	pH (pH)	8.40	8.42	9.14	8.44	8.50
	ORP (mV)	303	269	173	261	253
	Total Suspended Solids (mg/L)	<1.0	<1.0	48.6	4.8	4.9
	Total Dissolved Solids (mg/L)	177 <sup>DLHC</sup>	369 <sup>DLHC</sup>	1290 <sup>DLHC</sup>	216 <sup>DLHC</sup>	224 <sup>DLHC</sup>
	Turbidity (NTU)	0.23	3.38	96.4	8.40	6.81
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	140	235	473	181	178
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.2	11.8	98.8	8.8	11.2
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	145	246	572	190	189
	Ammonia as N (mg/L)	0.0095	0.0166	0.87 <sup>DLHC</sup>	0.0071	<0.0050
	Bicarbonate (HCO3) (mg/L)	170	286	577	221	217
	Bromide (Br) (mg/L)	<0.050	<0.050	0.79 <sup>DLHC</sup>	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	7.1	59.3	5.3	6.7
	Chloride (Cl) (mg/L)	<0.50	2.62	260 <sup>DLHC</sup>	<0.50	<0.50
	Fluoride (F) (mg/L)	0.169	0.155	3.05 <sup>DLHC</sup>	0.160	0.160
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	106	105	109	106	106
	Nitrate and Nitrite (as N) (mg/L)	0.115	0.383	<0.025 <sup>DLHC</sup>	0.212	0.212
	Nitrate (as N) (mg/L)	0.115	0.383	<0.025 <sup>DLHC</sup>	0.212	0.212
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.091	0.63 <sup>DLM</sup>	0.052	0.068
	Total Nitrogen (mg/L)	0.115	0.474	0.63 <sup>DLHC</sup>	0.264	0.281
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0080	0.428 <sup>DLHC</sup>	0.0110	0.0108
	Phosphorus (P)-Total (mg/L)	0.0023 <sup>RRV</sup>	0.0110	0.549 <sup>DLHC</sup>	0.0119	0.0089
	Sulfate (SO4) (mg/L)	15.3	77.5	35.0 <sup>DLHC</sup>	15.5	15.5
	Anion Sum (meq/L)	3.23	6.65	19.6	4.14	4.13
	Cation Sum (meq/L)	3.41	6.98	21.5	4.37	4.37
Cation - Anion Balance (%)	2.7	2.4	4.5	2.8	2.9	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	1.89	<5.0	3.77	3.43
	Total Organic Carbon (mg/L)	<0.50	1.94	<5.0	3.84	3.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	LAB	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0026	0.0592 <sup>DLDS</sup>	0.0043	0.0049

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2300711-1 Water 26-JUN-19 12:30 GH_MW-MC- 1S_WG_2019-06- 26_NP	L2300711-2 Water 26-JUN-19 08:50 GH_MW-MC- 2S_WG_2019-06- 26_NP	L2300711-3 Water 26-JUN-19 11:10 GH_MW-MC- 2D_WG_2019-06- 26_NP	L2300711-4 Water 26-JUN-19 15:05 GH_MW-WILLOW- 2S_WG_2019-06- 26_NP	L2300711-5 Water 26-JUN-19 15:30 GH_MW_MC10- A_WG_2019-06- 26_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00017	0.00087 <sup>DLDS</sup>	0.00012	0.00011
Arsenic (As)-Dissolved (mg/L)	0.00012	0.00030	0.0245 <sup>DLDS</sup>	0.00032	0.00032
Barium (Ba)-Dissolved (mg/L)	0.0543	0.103	0.0607 <sup>DLDS</sup>	0.155	0.162
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	0.028	0.801 <sup>DLDS</sup>	0.015	0.013
Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000289	<0.000025 <sup>DLDS</sup>	0.0000111	0.0000112
Calcium (Ca)-Dissolved (mg/L)	46.0	84.1	3.12 <sup>DLDS</sup>	51.7	50.7
Chromium (Cr)-Dissolved (mg/L)	0.00017	0.00011	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00011	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00036	<0.0010 <sup>DLDS</sup>	0.00051	0.00051
Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	0.058 <sup>DLDS</sup>	<0.010	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0021	0.0215	1.06 <sup>DLDS</sup>	0.0094	0.0093
Magnesium (Mg)-Dissolved (mg/L)	9.81	22.8	2.31 <sup>DLDS</sup>	16.1	16.5
Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0259	0.0251 <sup>DLDS</sup>	0.00016	0.00015
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00106	0.00150	0.00285 <sup>DLDS</sup>	0.000755	0.000755
Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00099	<0.0025 <sup>DLDS</sup>	0.00056	0.00056
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.42 <sup>DLDS</sup>	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.38	1.26	1.92 <sup>DLDS</sup>	1.01	1.04
Selenium (Se)-Dissolved (mg/L)	0.000963	0.00341	0.00198 <sup>DLDS</sup>	0.00121	0.00111
Silicon (Si)-Dissolved (mg/L)	1.89	3.95	3.64 <sup>DLDS</sup>	3.36	3.24
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	0.723	15.1	454 <sup>DLDS</sup>	5.15	5.13
Strontium (Sr)-Dissolved (mg/L)	0.195	0.251	0.154 <sup>DLDS</sup>	0.127	0.126
Sulfur (S)-Dissolved (mg/L)	5.96	31.6	137 <sup>DLDS</sup>	6.45	6.07
Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000016	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000668	0.00107	0.00117 <sup>DLDS</sup>	0.000403	0.000386
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	0.00075 <sup>DLDS</sup>	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL** Water Dissolved Mercury in Water by CVAAS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-DIS-ICP-CL** Water Dissolved Metals by ICPOES APHA 3030B/EPA 6010D

"This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (APHA Method 3030B) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL** Water Nitrate+Nitrite CALCULATION

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693878</b>							
<b>WG3095441-9</b>	<b>DUP</b>	<b>L2300711-2</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	03-JUL-19
<b>WG3095441-8</b>	<b>LCS</b>		99.0		%		85-115	03-JUL-19
Acidity (as CaCO3)								
<b>WG3095441-7</b>	<b>MB</b>		1.3		mg/L		2	03-JUL-19
Acidity (as CaCO3)								
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693000</b>							
<b>WG3094338-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.0		%		85-115	02-JUL-19
<b>WG3094338-16</b>	<b>MB</b>		<1.0		mg/L		1	02-JUL-19
Alkalinity, Total (as CaCO3)								
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4696054</b>							
<b>WG3098467-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.6		%		80-120	07-JUL-19
<b>WG3098467-1</b>	<b>MB</b>		<0.000020		mg/L		0.00002	07-JUL-19
Beryllium (Be)-Dissolved								
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693000</b>							
<b>WG3094338-16</b>	<b>MB</b>		<5.0		mg/L		5	02-JUL-19
Bicarbonate (HCO3)								
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693100</b>							
<b>WG3094875-10</b>	<b>LCS</b>		98.3		%		85-115	28-JUN-19
Bromide (Br)								
<b>WG3094875-14</b>	<b>LCS</b>		97.7		%		85-115	28-JUN-19
Bromide (Br)								
<b>WG3094875-13</b>	<b>MB</b>		<0.050		mg/L		0.05	28-JUN-19
Bromide (Br)								
<b>WG3094875-9</b>	<b>MB</b>		<0.050		mg/L		0.05	28-JUN-19
Bromide (Br)								
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4694629							
<b>WG3096841-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.7		%		80-120	04-JUL-19
<b>WG3096841-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-JUL-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4694629							
<b>WG3096841-6</b>	<b>LCS</b>							
Total Organic Carbon			101.0		%		80-120	04-JUL-19
<b>WG3096841-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-JUL-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4693100							
<b>WG3094875-10</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	28-JUN-19
<b>WG3094875-14</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		90-110	28-JUN-19
<b>WG3094875-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-JUN-19
<b>WG3094875-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-JUN-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4693000							
<b>WG3094338-16</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	02-JUL-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4693000							
<b>WG3094338-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			92.9		%		90-110	02-JUL-19
<b>WG3094338-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-JUL-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4693100							
<b>WG3094875-10</b>	<b>LCS</b>							
Fluoride (F)			103.1		%		90-110	28-JUN-19
<b>WG3094875-14</b>	<b>LCS</b>							
Fluoride (F)			101.0		%		90-110	28-JUN-19



## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693100</b>							
<b>WG3094875-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-JUN-19
<b>WG3094875-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-JUN-19
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4693027</b>							
<b>WG3094520-18</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			88.7		%		80-120	03-JUL-19
<b>WG3094520-17</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-JUL-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4696054</b>							
<b>WG3098467-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.9		%		80-120	07-JUL-19
Antimony (Sb)-Dissolved			97.3		%		80-120	07-JUL-19
Arsenic (As)-Dissolved			99.6		%		80-120	07-JUL-19
Barium (Ba)-Dissolved			101.0		%		80-120	07-JUL-19
Bismuth (Bi)-Dissolved			95.4		%		80-120	07-JUL-19
Boron (B)-Dissolved			94.5		%		80-120	07-JUL-19
Cadmium (Cd)-Dissolved			96.6		%		80-120	07-JUL-19
Calcium (Ca)-Dissolved			101.8		%		80-120	07-JUL-19
Chromium (Cr)-Dissolved			101.6		%		80-120	07-JUL-19
Cobalt (Co)-Dissolved			99.9		%		80-120	07-JUL-19
Copper (Cu)-Dissolved			95.6		%		80-120	07-JUL-19
Iron (Fe)-Dissolved			100.8		%		80-120	07-JUL-19
Lead (Pb)-Dissolved			98.3		%		80-120	07-JUL-19
Lithium (Li)-Dissolved			93.4		%		80-120	07-JUL-19
Magnesium (Mg)-Dissolved			96.0		%		80-120	07-JUL-19
Manganese (Mn)-Dissolved			101.5		%		80-120	07-JUL-19
Molybdenum (Mo)-Dissolved			104.9		%		80-120	07-JUL-19
Nickel (Ni)-Dissolved			98.6		%		80-120	07-JUL-19
Phosphorus (P)-Dissolved			102.9		%		70-130	07-JUL-19
Potassium (K)-Dissolved			103.9		%		80-120	07-JUL-19
Selenium (Se)-Dissolved			97.7		%		80-120	07-JUL-19
Silicon (Si)-Dissolved			102.7		%		60-140	07-JUL-19
Silver (Ag)-Dissolved			102.5		%		80-120	07-JUL-19



## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4696054</b>							
<b>WG3098467-2</b>	<b>LCS</b>	<b>TMRM</b>						
Sodium (Na)-Dissolved			98.9		%		80-120	07-JUL-19
Strontium (Sr)-Dissolved			93.3		%		80-120	07-JUL-19
Sulfur (S)-Dissolved			101.8		%		80-120	07-JUL-19
Thallium (Tl)-Dissolved			98.0		%		80-120	07-JUL-19
Tin (Sn)-Dissolved			101.5		%		80-120	07-JUL-19
Titanium (Ti)-Dissolved			100.8		%		80-120	07-JUL-19
Uranium (U)-Dissolved			98.5		%		80-120	07-JUL-19
Vanadium (V)-Dissolved			100.2		%		80-120	07-JUL-19
Zinc (Zn)-Dissolved			97.8		%		80-120	07-JUL-19
Zirconium (Zr)-Dissolved			99.8		%		80-120	07-JUL-19
<b>WG3098467-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-JUL-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	07-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-JUL-19



## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4696054</b>							
<b>WG3098467-1</b>	<b>MB</b>							
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-JUL-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	07-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-JUL-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	07-JUL-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4692991</b>							
<b>WG3094218-34</b>	<b>LCS</b>							
Ammonia as N			105.7		%		85-115	02-JUL-19
<b>WG3094218-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-JUL-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4693100</b>							
<b>WG3094875-10</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	28-JUN-19
<b>WG3094875-14</b>	<b>LCS</b>							
Nitrite (as N)			103.5		%		90-110	28-JUN-19
<b>WG3094875-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-JUN-19
<b>WG3094875-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-JUN-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4693100</b>							
<b>WG3094875-10</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	28-JUN-19
<b>WG3094875-14</b>	<b>LCS</b>							
Nitrate (as N)			99.4		%		90-110	28-JUN-19
<b>WG3094875-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-JUN-19
<b>WG3094875-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-JUN-19





## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Water								
Batch R4693100								
WG3094875-9 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	28-JUN-19
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R4693899								
WG3094322-9 DUP								
L2300711-4								
Total Dissolved Solids								
		216	215		mg/L	0.2	20	03-JUL-19
WG3094322-11 LCS								
Total Dissolved Solids								
			99.6		%		85-115	03-JUL-19
WG3094322-8 LCS								
Total Dissolved Solids								
			97.1		%		85-115	03-JUL-19
WG3094322-10 MB								
Total Dissolved Solids								
			<10		mg/L		10	03-JUL-19
WG3094322-7 MB								
Total Dissolved Solids								
			<10		mg/L		10	03-JUL-19
<b>TKN-L-F-CL</b>								
Water								
Batch R4708194								
WG3102566-7 DUP								
L2300711-1								
Total Kjeldahl Nitrogen								
		<0.050	<0.050	RPD-NA	mg/L	N/A	20	10-JUL-19
WG3102566-6 LCS								
Total Kjeldahl Nitrogen								
			95.4		%		75-125	10-JUL-19
WG3102566-5 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	10-JUL-19
WG3102566-8 MS								
Total Kjeldahl Nitrogen								
		L2300711-1	103.1		%		70-130	12-JUL-19
<b>TSS-L-CL</b>								
Water								
Batch R4694868								
WG3094255-8 LCS								
Total Suspended Solids								
			90.4		%		85-115	03-JUL-19
WG3094255-7 MB								
Total Suspended Solids								
			<1.0		mg/L		1	03-JUL-19
<b>TURBIDITY-CL</b>								
Water								
Batch R4690960								
WG3091840-14 LCS								
Turbidity								
			96.5		%		85-115	28-JUN-19
WG3091840-17 LCS								
Turbidity								
			95.0		%		85-115	28-JUN-19
WG3091840-13 MB								



## Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4690960</b>							
<b>WG3091840-13 MB</b>								
Turbidity			<0.10		NTU		0.1	28-JUN-19
<b>WG3091840-16 MB</b>								
Turbidity			<0.10		NTU		0.1	28-JUN-19



# Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2300711

Report Date: 21-NOV-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	26-JUN-19 12:30	06-JUL-19 09:25	0.25	237	hours	EHTR-FM
	2	26-JUN-19 08:50	06-JUL-19 09:25	0.25	240	hours	EHTR-FM
	3	26-JUN-19 11:10	06-JUL-19 09:25	0.25	238	hours	EHTR-FM
	4	26-JUN-19 15:05	06-JUL-19 09:25	0.25	234	hours	EHTR-FM
	5	26-JUN-19 15:30	06-JUL-19 09:25	0.25	234	hours	EHTR-FM
pH							
	1	26-JUN-19 12:30	02-JUL-19 17:00	0.25	149	hours	EHTR-FM
	2	26-JUN-19 08:50	02-JUL-19 17:00	0.25	152	hours	EHTR-FM
	3	26-JUN-19 11:10	02-JUL-19 17:00	0.25	150	hours	EHTR-FM
	4	26-JUN-19 15:05	02-JUL-19 17:00	0.25	146	hours	EHTR-FM
	5	26-JUN-19 15:30	02-JUL-19 17:00	0.25	145	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2300711 were received on 27-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2300711-COFC

COC Number: 19 -

Page 1 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>				<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				Priority (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>													
Phone: Tel.: 604-515-5151 x 129 Cell: [ ]		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked				EMERGENCY: 1 Business day [E1 - 100%] Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>													
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				Date and Time Required for all E&P TATs: [ ]													
Street: 520 Lake Street		Email 1 or Fax: K.C@snclavalin.com; K.M@snclavalin.com				For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province: Nelson, BC		Email 2: G.P@snclavalin.com; V.L@snclavalin.com				<b>Analysis Request</b>													
Postal Code: V1L 4C6		Email 3: cam.jaeger@teck.com				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
<b>Invoice To</b>		<b>Invoice Distribution</b>				<b>Analysis Request</b>													
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				F/P P F/P P													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax: payables@snclavalin.com				DOC (C-DIS-ORG-LOW-CL) TOC (C-TOT-ORG-LOW-CL) BC MDG D-Mer. + Hg (MET-D-BCMDG-CL) Total N Calc. (N-T-CALC-CL) Nitrate + Nitrite Calc. (N2NG-CALC-CL) Teck Routine (TECKCOAL-ROUTINE-CL) TKN (TKN-L-F-CL) REPORTING CODES: Dissolved Boron in Water (CL-B-DIS-MS) Dissolved Bismuth in Water (CL-BI-DIS-MS) Dissolved Ca in Water (CL-CA-DIS-CCMS)													
Company: [ ]		Email 2: katrina.cheung@snclavalin.com				SAMPLES ON HOLD [ ]													
Contact: [ ]		Major/Minor Code: [ ] Routing Code: [ ]				Sample is hazardous (please provide further detail) [ ]													
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>				NUMBER OF CONTAINERS [ ]													
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: [ ] PO#: [ ]																	
Job #: 658004		Major/Minor Code: [ ] Routing Code: [ ]																	
PO / AFE: 658004		Requisitioner: [ ]																	
LSD: [ ]		Location: [ ]																	
ALS Lab Work Order # (lab use only): 711		ALS Contact: Ryan Smyth 403-407-1816		Sampler: B. Hansen															
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BC MDG D-Mer. + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2NG-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	REPORTING CODES:	Dissolved Boron in Water (CL-B-DIS-MS)	Dissolved Bismuth in Water (CL-BI-DIS-MS)	Dissolved Ca in Water (CL-CA-DIS-CCMS)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
1	GH_MW-MC-1S_WG_2019_06_26_NP	GH_MW-MC-1S	26-Jun-19	1230	Water	R	R	R	R	R	R	R		R	R	R			
2	GH_MW-MC-2S_WG_2019_06_26_NP	GH_MW-MC-2S	26-Jun-19	850	Water	R	R	R	R	R	R	R		R	R	R			
3	GH_MW-MC-2D_WG_2019_06_26_NP	GH_MW-MC-2D	26-Jun-19	1110	Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-1S_WG_2019_06_26_NP	GH_MW-Willow-1S			Water	R	R	R	R	R	R	R		R	R	R			
4	GH_MW-Willow-2S_WG_2019_06_26_NP	GH_MW-Willow-2S	26-Jun-19	1505	Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-2D_WG_2019_06_26_NP	GH_MW-Willow-2D			Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-3S_WG_2019_06_26_NP	GH_MW-Willow-3S			Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-3D_WG_2019_06_26_NP	GH_MW-Willow-3D			Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-1S_WG_2019_06_26_NP	GH_MW-Willow-1S			Water	R	R	R	R	R	R	R		R	R	R			
	GH_MW-Willow-1D_WG_2019_06_26_NP	GH_MW-Willow-1D			Water	R	R	R	R	R	R	R		R	R	R			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>													
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Teck Facility Name: (please select the applicable Facility) GH0-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/>													
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						INITIAL COOLER TEMPERATURES °C: 10 FINAL COOLER TEMPERATURES °C: [ ]													
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>													
Released by: [Signature]		Date: June 26, 2019	Time: 1600	Received by: [Signature]		Date: 6/27	Time: 9:00	Received by: [ ] Date: [ ] Time: [ ]											



### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2300711-COFC

COC Number: 19 -

Page 2 of 2

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																																																																																																																																							
Company: SNC-Lavalin ~Nelson			Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																																																																							
Contact: Katrina Cheung			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			PRIORITY (Business Days) 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>			EMERGENCY 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>																																																																																																																																																																				
Phone: Tel. 604-515-5151 x 129 Cell.:			<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked																																																																																																																																																																										
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:																																																																																																																																																																							
Street: 520 Lake Street			Email 1 or Fax K.C@snclavalin.com; K.M@snclavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																																																																							
City/Province: Nelson, BC			Email 2 G.P@snclavalin.com; V.L@snclavalin.com			<b>Analysis Request</b>																																																																																																																																																																							
Postal Code: V1L 4C6			Email 3 cam.jaeger@teck.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																																																							
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<b>Invoice Distribution</b>			<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr><th colspan="2"></th><th colspan="2">DOC (C-DIS-ORG-LOW-CL)</th><th colspan="2">TOC (C-TOT-ORG-LOW-CL)</th><th colspan="2">BC MDG D-Met. + Hg (MET-D-BCMDG-CL)</th><th colspan="2">Total N Calc. (N-T-CALC-CL)</th><th colspan="2">Nitrate + Nitrite Calc. (N2N3-CALC-CL)</th><th colspan="2">Teck Routine (TECKCOAL-ROUTINE-CL)</th><th colspan="2">TKN (TKN-L-F-CL)</th><th colspan="3">REPORTING CODES:</th><th rowspan="7">SAMPLES ON HOLD</th><th rowspan="7">Sample is hazardous (please provide further detail)</th><th rowspan="7">NUMBER OF CONTAINERS</th></tr> <tr><td>F/P</td><td>P</td><td>F/P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>														DOC (C-DIS-ORG-LOW-CL)		TOC (C-TOT-ORG-LOW-CL)		BC MDG D-Met. + Hg (MET-D-BCMDG-CL)		Total N Calc. (N-T-CALC-CL)		Nitrate + Nitrite Calc. (N2N3-CALC-CL)		Teck Routine (TECKCOAL-ROUTINE-CL)		TKN (TKN-L-F-CL)		REPORTING CODES:			SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS	F/P	P	F/P																																																																																																																																			
		DOC (C-DIS-ORG-LOW-CL)		TOC (C-TOT-ORG-LOW-CL)														BC MDG D-Met. + Hg (MET-D-BCMDG-CL)		Total N Calc. (N-T-CALC-CL)		Nitrate + Nitrite Calc. (N2N3-CALC-CL)		Teck Routine (TECKCOAL-ROUTINE-CL)		TKN (TKN-L-F-CL)		REPORTING CODES:			SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS																																																																																																																																												
F/P	P	F/P																																																																																																																																																																											
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																																																																																																																																																																										
Company:			Email 1 or Fax payables@snclavalin.com																																																																																																																																																																										
Contact:			Email 2 katrina.cheung@snclavalin.com																																																																																																																																																																										
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>																																																																																																																																																																										
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center:			PO#																																																																																																																																																																							
Job #: 658004			Major/Minor Code:			Routing Code:																																																																																																																																																																							
PO / AFE: 658004			Requisitioner:																																																																																																																																																																										
LSD:			Location:																																																																																																																																																																										
ALS Lab Work Order # (lab use only):			ALS Contact: Ryan Smyth 403-407-1816			Sampler: B. Hansen																																																																																																																																																																							
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BC MDG D-Met. + Hg	Total N Calc.	Nitrate + Nitrite Calc.	Teck Routine	TKN	REPORTING CODES:	Dissolved Boron in Water	Dissolved Bismuth in Water	Dissolved Ca in Water	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS																																																																																																																																																										
	GH_MW-WoIf-2S_WG_2019_0 NP	GH_MW-WoIf-2S			Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
	GH_MW-WoIf-2D_WG_2019_0 NP	GH_MW-WoIf-2D			Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
5	GH_MW_MC10-A_WG_2019_06 NP	GH_MW_MC10-A	26 Jun-19	1530	Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
	GH_MW_MC10-A_WG_2019_0 NP	GH_MW_MC10-A			water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
	GH_MW_MC10-B_WG_2019_0 NP	GH_MW_MC10-B			Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
	GH_MW_MC10-C_WG_2019_0 NP	GH_MW_MC10-C			Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													
	GH_MW_MC10-D_WG_2019_0 NP	GH_MW_MC10-D			Water	R	R	R	R	R	R	R		R	R	R																																																																																																																																																													

<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>						<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>								
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									Frozen <input type="checkbox"/> Ice Cubes <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>								
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									Ice Packs <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/>								
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>						<b>FINAL SHIPMENT RECEPTION (lab use only)</b>								
									Teck Facility Name: (please select the applicable Facility) GH0-GREENHILLS OPERATION    FRO-FORDING RIVER OPERATION    EVO-ELKVIEW OPERATIONS								
Released by: <i>Brian Hansen</i>			Date: June 26, 2019			Time: 1600			Received by: <i>PK</i>			Date: 6/27			Time: 09:00		

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY    YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

©EPI 2017 19301



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 31-JUL-19  
Report Date: 10-AUG-19 14:28 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2320531  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-07  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-1 GH_GA-MW-1_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 12:25							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.68		0.50	mg/L		02-AUG-19	R4739211
Total Kjeldahl Nitrogen	0.194		0.050	mg/L		06-AUG-19	R4740213
Mercury (Hg)-Total	0.00146		0.00050	ug/L		08-AUG-19	R4744566
Total Organic Carbon	2.73		0.50	mg/L		02-AUG-19	R4739211
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-AUG-19	02-AUG-19	R4738194
Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4737141
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-AUG-19	04-AUG-19	R4739436
Dissolved Mercury Filtration Location	FIELD					03-AUG-19	R4739136
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4737141
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-AUG-19	02-AUG-19	R4738194
Antimony (Sb)-Dissolved	0.00082		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Arsenic (As)-Dissolved	0.00050		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Barium (Ba)-Dissolved	0.0390		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Boron (B)-Dissolved	0.902		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cadmium (Cd)-Dissolved	0.0277		0.0050	ug/L	02-AUG-19	02-AUG-19	R4738194
Calcium (Ca)-Dissolved	59.6		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Chromium (Cr)-Dissolved	0.00011		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cobalt (Co)-Dissolved	0.31		0.10	ug/L	02-AUG-19	02-AUG-19	R4738194
Copper (Cu)-Dissolved	0.0544		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Iron (Fe)-Dissolved	0.039		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Lithium (Li)-Dissolved	0.180		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
Magnesium (Mg)-Dissolved	33.6		0.10	mg/L	02-AUG-19	02-AUG-19	R4738194
Manganese (Mn)-Dissolved	0.126		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Molybdenum (Mo)-Dissolved	0.00506		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Nickel (Ni)-Dissolved	0.00476		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Potassium (K)-Dissolved	3.02		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Selenium (Se)-Dissolved	0.147		0.050	ug/L	02-AUG-19	02-AUG-19	R4738194
Silicon (Si)-Dissolved	4.00		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Sodium (Na)-Dissolved	160		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Strontium (Sr)-Dissolved	3.97		0.00020	mg/L	02-AUG-19	02-AUG-19	R4738194
Thallium (Tl)-Dissolved	0.000028		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Uranium (U)-Dissolved	0.00159		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Zinc (Zn)-Dissolved	0.0049		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	287		0.50	mg/L		02-AUG-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-AUG-19	R4738194
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		04-AUG-19	R4739056
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-1 GH_GA-MW-1_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 12:25							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0619		0.0030	mg/L		02-AUG-19	R4738194
Antimony (Sb)-Total	0.00067		0.00010	mg/L		02-AUG-19	R4738194
Arsenic (As)-Total	0.00051		0.00010	mg/L		02-AUG-19	R4738194
Barium (Ba)-Total	0.0407		0.00010	mg/L		02-AUG-19	R4738194
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-AUG-19	R4738194
Boron (B)-Total	0.945		0.010	mg/L		02-AUG-19	R4738194
Cadmium (Cd)-Total	0.0261		0.0050	ug/L		02-AUG-19	R4738194
Calcium (Ca)-Total	59.8		0.050	mg/L		02-AUG-19	R4738194
Chromium (Cr)-Total	0.00023		0.00010	mg/L		02-AUG-19	R4738194
Cobalt (Co)-Total	0.39		0.10	ug/L		02-AUG-19	R4738194
Copper (Cu)-Total	0.0525		0.00050	mg/L		02-AUG-19	R4738194
Iron (Fe)-Total	0.112		0.010	mg/L		02-AUG-19	R4738194
Lead (Pb)-Total	0.000058		0.000050	mg/L		02-AUG-19	R4738194
Lithium (Li)-Total	0.188		0.0010	mg/L		02-AUG-19	R4738194
Magnesium (Mg)-Total	31.3		0.10	mg/L		02-AUG-19	R4738194
Manganese (Mn)-Total	0.124		0.00010	mg/L		02-AUG-19	R4738194
Molybdenum (Mo)-Total	0.00526		0.000050	mg/L		02-AUG-19	R4738194
Nickel (Ni)-Total	0.00410		0.00050	mg/L		02-AUG-19	R4738194
Potassium (K)-Total	3.03		0.050	mg/L		02-AUG-19	R4738194
Selenium (Se)-Total	0.108		0.050	ug/L		02-AUG-19	R4738194
Silicon (Si)-Total	4.26		0.10	mg/L		02-AUG-19	R4738194
Silver (Ag)-Total	<0.000010		0.000010	mg/L		02-AUG-19	R4738194
Sodium (Na)-Total	157		0.050	mg/L		02-AUG-19	R4738194
Strontium (Sr)-Total	4.05		0.00020	mg/L		02-AUG-19	R4738194
Thallium (Tl)-Total	0.000034		0.000010	mg/L		02-AUG-19	R4738194
Tin (Sn)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-AUG-19	R4738194
Uranium (U)-Total	0.00174		0.000010	mg/L		02-AUG-19	R4738194
Vanadium (V)-Total	<0.00050		0.00050	mg/L		02-AUG-19	R4738194
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		02-AUG-19	R4738194
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.4		1.0	mg/L		02-AUG-19	R4739851
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	370		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Carbonate (as CaCO3)	9.2		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Total (as CaCO3)	379		1.0	mg/L		02-AUG-19	R4739898
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.139		0.0050	mg/L		09-AUG-19	R4745662
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		01-AUG-19	R4737231
<b>Chloride in Water by IC</b>							
Chloride (Cl)	15.9	DLHC	2.5	mg/L		01-AUG-19	R4737231
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1230		2.0	uS/cm		02-AUG-19	R4739898
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.64	DLHC	0.10	mg/L		01-AUG-19	R4737231
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.1			%		06-AUG-19	
Anion Sum	13.6			meq/L		06-AUG-19	
Cation Sum	12.8			meq/L		06-AUG-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-1 GH_GA-MW-1_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 12:25 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	94.1		-100	%		06-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.116	DLHC	0.025	mg/L		01-AUG-19	R4737231
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		01-AUG-19	R4737231
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0281		0.0010	mg/L		01-AUG-19	R4737938
<b>Oxidation redution potential by elect.</b>							
ORP	430		-1000	mV		02-AUG-19	R4739043
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0301		0.0020	mg/L		02-AUG-19	R4738714
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	265	DLHC	1.5	mg/L		01-AUG-19	R4737231
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	801	DLHC	20	mg/L		02-AUG-19	R4739284
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.2		1.0	mg/L		02-AUG-19	R4740155
<b>Turbidity</b>							
Turbidity	3.47		0.10	NTU		31-JUL-19	R4734318
<b>pH</b>							
pH	8.37		0.10	pH		02-AUG-19	R4739898
L2320531-2 GH_GWB1_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		10-AUG-19	
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		06-AUG-19	R4740213
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		08-AUG-19	R4744566
Total Organic Carbon	<0.50		0.50	mg/L		02-AUG-19	R4739211
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-AUG-19	R4738194
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		04-AUG-19	R4739056
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		02-AUG-19	R4738194
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Arsenic (As)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Barium (Ba)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-AUG-19	R4738194
Boron (B)-Total	<0.010		0.010	mg/L		02-AUG-19	R4738194
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		02-AUG-19	R4738194
Calcium (Ca)-Total	<0.050		0.050	mg/L		02-AUG-19	R4738194
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Cobalt (Co)-Total	<0.10		0.10	ug/L		02-AUG-19	R4738194
Copper (Cu)-Total	<0.00050		0.00050	mg/L		02-AUG-19	R4738194
Iron (Fe)-Total	<0.010		0.010	mg/L		02-AUG-19	R4738194
Lead (Pb)-Total	<0.000050		0.000050	mg/L		02-AUG-19	R4738194
Lithium (Li)-Total	<0.0010		0.0010	mg/L		02-AUG-19	R4738194
Magnesium (Mg)-Total	<0.10		0.10	mg/L		02-AUG-19	R4738194
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-2 GH_GWB1_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		02-AUG-19	R4738194
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		02-AUG-19	R4738194
Potassium (K)-Total	<0.050		0.050	mg/L		02-AUG-19	R4738194
Selenium (Se)-Total	<0.050		0.050	ug/L		02-AUG-19	R4738194
Silicon (Si)-Total	<0.10		0.10	mg/L		02-AUG-19	R4738194
Silver (Ag)-Total	<0.000010		0.000010	mg/L		02-AUG-19	R4738194
Sodium (Na)-Total	<0.050		0.050	mg/L		02-AUG-19	R4738194
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		02-AUG-19	R4738194
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		02-AUG-19	R4738194
Tin (Sn)-Total	<0.00010		0.00010	mg/L		02-AUG-19	R4738194
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-AUG-19	R4738194
Uranium (U)-Total	<0.000010		0.000010	mg/L		02-AUG-19	R4738194
Vanadium (V)-Total	<0.00050		0.00050	mg/L		02-AUG-19	R4738194
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		02-AUG-19	R4738194
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.9		1.0	mg/L		02-AUG-19	R4739851
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		08-AUG-19	R4744620
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-AUG-19	R4737231
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		01-AUG-19	R4737231
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					08-AUG-19	R4744464
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		08-AUG-19	R4744534
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		08-AUG-19	R4744534
Potassium (K)-Dissolved	<0.050		0.050	mg/L		08-AUG-19	R4744534
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		08-AUG-19	R4744534
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		02-AUG-19	R4739898
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		01-AUG-19	R4737231
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		10-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		10-AUG-19	
Anion Sum	<0.10			meq/L		10-AUG-19	
Cation Sum	<0.10			meq/L		10-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		01-AUG-19	R4737231
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-AUG-19	R4737231
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		01-AUG-19	R4737938
<b>Oxidation redution potential by elect.</b>							
ORP	454		-1000	mV		02-AUG-19	R4739043

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-2 GH_GWB1_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 12:00 Matrix: WG							
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-AUG-19	R4738714
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		01-AUG-19	R4737231
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		02-AUG-19	R4739284
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		02-AUG-19	R4740155
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		31-JUL-19	R4734318
<b>pH</b> pH	5.44		0.10	pH		02-AUG-19	R4739898
L2320531-3 GH_GWD1_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	2.52		0.50	mg/L		02-AUG-19	R4739211
Total Kjeldahl Nitrogen	0.188		0.050	mg/L		06-AUG-19	R4740213
Mercury (Hg)-Total	0.00129		0.00050	ug/L		08-AUG-19	R4744566
Total Organic Carbon	2.58		0.50	mg/L		02-AUG-19	R4739211
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-AUG-19	02-AUG-19	R4738194
Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4737141
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-AUG-19	04-AUG-19	R4739436
Dissolved Mercury Filtration Location	FIELD					03-AUG-19	R4739136
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4737141
Aluminum (Al)-Dissolved	<0.0030	DTMF	0.0030	mg/L	02-AUG-19	02-AUG-19	R4738194
Antimony (Sb)-Dissolved	0.00090		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Arsenic (As)-Dissolved	0.00054		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Barium (Ba)-Dissolved	0.0409		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Boron (B)-Dissolved	0.843		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cadmium (Cd)-Dissolved	0.0244		0.0050	ug/L	02-AUG-19	02-AUG-19	R4738194
Calcium (Ca)-Dissolved	57.9		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cobalt (Co)-Dissolved	0.30		0.10	ug/L	02-AUG-19	02-AUG-19	R4738194
Copper (Cu)-Dissolved	0.0562		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Iron (Fe)-Dissolved	0.041		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Lithium (Li)-Dissolved	0.167		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
Magnesium (Mg)-Dissolved	30.7		0.10	mg/L	02-AUG-19	02-AUG-19	R4738194
Manganese (Mn)-Dissolved	0.125		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Molybdenum (Mo)-Dissolved	0.00507		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Nickel (Ni)-Dissolved	0.00511		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Potassium (K)-Dissolved	2.96		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Selenium (Se)-Dissolved	0.219		0.050	ug/L	02-AUG-19	02-AUG-19	R4738194
Silicon (Si)-Dissolved	3.94		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Sodium (Na)-Dissolved	152		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-3 GH_GWD1_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Strontium (Sr)-Dissolved	3.96		0.00020	mg/L	02-AUG-19	02-AUG-19	R4738194
Thallium (Tl)-Dissolved	0.000030		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Tin (Sn)-Dissolved	0.00013		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Uranium (U)-Dissolved	0.00159		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Zinc (Zn)-Dissolved	0.0051		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	271		0.50	mg/L		02-AUG-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		02-AUG-19	R4738194
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		04-AUG-19	R4739056
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0511		0.0030	mg/L		02-AUG-19	R4738194
Antimony (Sb)-Total	0.00064		0.00010	mg/L		02-AUG-19	R4738194
Arsenic (As)-Total	0.00048		0.00010	mg/L		02-AUG-19	R4738194
Barium (Ba)-Total	0.0399		0.00010	mg/L		02-AUG-19	R4738194
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		02-AUG-19	R4738194
Boron (B)-Total	0.931		0.010	mg/L		02-AUG-19	R4738194
Cadmium (Cd)-Total	0.0261		0.0050	ug/L		02-AUG-19	R4738194
Calcium (Ca)-Total	60.2		0.050	mg/L		02-AUG-19	R4738194
Chromium (Cr)-Total	0.00023		0.00010	mg/L		02-AUG-19	R4738194
Cobalt (Co)-Total	0.39		0.10	ug/L		02-AUG-19	R4738194
Copper (Cu)-Total	0.0543		0.00050	mg/L		02-AUG-19	R4738194
Iron (Fe)-Total	0.102		0.010	mg/L		02-AUG-19	R4738194
Lead (Pb)-Total	0.000057		0.000050	mg/L		02-AUG-19	R4738194
Lithium (Li)-Total	0.182		0.0010	mg/L		02-AUG-19	R4738194
Magnesium (Mg)-Total	32.8		0.10	mg/L		02-AUG-19	R4738194
Manganese (Mn)-Total	0.125		0.00010	mg/L		02-AUG-19	R4738194
Molybdenum (Mo)-Total	0.00508		0.000050	mg/L		02-AUG-19	R4738194
Nickel (Ni)-Total	0.00431		0.00050	mg/L		02-AUG-19	R4738194
Potassium (K)-Total	3.06		0.050	mg/L		02-AUG-19	R4738194
Selenium (Se)-Total	0.138		0.050	ug/L		02-AUG-19	R4738194
Silicon (Si)-Total	4.39		0.10	mg/L		02-AUG-19	R4738194
Silver (Ag)-Total	0.000011		0.000010	mg/L		02-AUG-19	R4738194
Sodium (Na)-Total	165		0.050	mg/L		02-AUG-19	R4738194
Strontium (Sr)-Total	4.10		0.00020	mg/L		02-AUG-19	R4738194
Thallium (Tl)-Total	0.000030		0.000010	mg/L		02-AUG-19	R4738194
Tin (Sn)-Total	0.00048		0.00010	mg/L		02-AUG-19	R4738194
Titanium (Ti)-Total	<0.010		0.010	mg/L		02-AUG-19	R4738194
Uranium (U)-Total	0.00167		0.000010	mg/L		02-AUG-19	R4738194
Vanadium (V)-Total	<0.00050		0.00050	mg/L		02-AUG-19	R4738194
Zinc (Zn)-Total	0.0033		0.0030	mg/L		02-AUG-19	R4738194
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.6		1.0	mg/L		02-AUG-19	R4739851
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	374		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Carbonate (as CaCO3)	17.6		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-3 GH_GWD1_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 12:00 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	391		1.0	mg/L		02-AUG-19	R4739898
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.121		0.0050	mg/L		09-AUG-19	R4745662
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		01-AUG-19	R4737231
<b>Chloride in Water by IC</b>							
Chloride (Cl)	18.5	DLHC	2.5	mg/L		01-AUG-19	R4737231
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1300		2.0	uS/cm		02-AUG-19	R4739898
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.65	DLHC	0.10	mg/L		01-AUG-19	R4737231
<b>Ion Balance Calculation</b>							
Ion Balance	82.9		-100	%		08-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-9.3			%		06-AUG-19	
Anion Sum	14.6			meq/L		06-AUG-19	
Cation Sum	12.1			meq/L		06-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.140	DLHC	0.025	mg/L		01-AUG-19	R4737231
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		01-AUG-19	R4737231
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0259		0.0010	mg/L		01-AUG-19	R4737938
<b>Oxidation reduction potential by elect.</b>							
ORP	298		-1000	mV		02-AUG-19	R4739043
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0303		0.0020	mg/L		02-AUG-19	R4738714
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	300	DLHC	1.5	mg/L		01-AUG-19	R4737231
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	827	DLHC	20	mg/L		02-AUG-19	R4739284
<b>Total Suspended Solids</b>							
Total Suspended Solids	7.1		1.0	mg/L		02-AUG-19	R4740155
<b>Turbidity</b>							
Turbidity	4.08		0.10	NTU		31-JUL-19	R4734318
<b>pH</b>							
pH	8.44		0.10	pH		02-AUG-19	R4739898
L2320531-4 GH_TRIPGW_WG_2019-07-01_NP Sampled By: CLIENT on 30-JUL-19 @ 15:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-AUG-19	R4739211
Hardness (as CaCO3)	<0.50		0.50	mg/L		03-AUG-19	
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		07-AUG-19	R4740213
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		04-AUG-19	R4739056
Total Organic Carbon	<0.50		0.50	mg/L		02-AUG-19	R4739211
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-AUG-19	02-AUG-19	R4738194
Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4737141
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-4 GH_TRIPGW_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 15:00							
Matrix: WG							
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	03-AUG-19	04-AUG-19	R4739436
Dissolved Mercury Filtration Location	FIELD					03-AUG-19	R4739136
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-AUG-19	R4738793
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-AUG-19	02-AUG-19	R4738194
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-AUG-19	02-AUG-19	R4738194
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	02-AUG-19	02-AUG-19	R4739185
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-AUG-19	02-AUG-19	R4738194
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	02-AUG-19	02-AUG-19	R4738194
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	02-AUG-19	02-AUG-19	R4738194
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Potassium (K)-Dissolved	<0.050		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-AUG-19	02-AUG-19	R4738194
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	02-AUG-19	02-AUG-19	R4738194
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	02-AUG-19	02-AUG-19	R4739185
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-AUG-19	02-AUG-19	R4738194
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-AUG-19	02-AUG-19	R4738194
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-AUG-19	02-AUG-19	R4738194
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-AUG-19	02-AUG-19	R4738194
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-AUG-19	02-AUG-19	R4738194
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.9		1.0	mg/L		02-AUG-19	R4739851
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		02-AUG-19	R4739898
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		08-AUG-19	R4744620
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-AUG-19	R4737231
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		01-AUG-19	R4737231
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		02-AUG-19	R4739898
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		01-AUG-19	R4737231

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2320531-4 GH_TRIPGW_WG_2019-07-01_NP							
Sampled By: CLIENT on 30-JUL-19 @ 15:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		06-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		06-AUG-19	
Anion Sum	<0.10			meq/L		06-AUG-19	
Cation Sum	<0.10			meq/L		06-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		01-AUG-19	R4737231
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-AUG-19	R4737231
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		01-AUG-19	R4737938
<b>Oxidation redution potential by elect.</b>							
ORP	493		-1000	mV		02-AUG-19	R4739043
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		02-AUG-19	R4738714
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		01-AUG-19	R4737231
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		02-AUG-19	R4739284
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		02-AUG-19	R4740155
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		31-JUL-19	R4734318
<b>pH</b>							
pH	5.50		0.10	pH		02-AUG-19	R4739898

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulfate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-07

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739851</b>							
<b>WG3124348-3</b>	<b>DUP</b>	<b>L2320531-3</b>						
Acidity (as CaCO3)		7.6	7.3		mg/L	4.3	20	02-AUG-19
<b>WG3124348-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.3		%		85-115	02-AUG-19
<b>WG3124348-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	02-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739898</b>							
<b>WG3124354-3</b>	<b>DUP</b>	<b>L2320531-3</b>						
Alkalinity, Total (as CaCO3)		391	386		mg/L	1.4	20	02-AUG-19
<b>WG3124354-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.3		%		85-115	02-AUG-19
<b>WG3124354-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			105.5		%		80-120	02-AUG-19
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122172-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			114.7		%		80-120	02-AUG-19
<b>WG3122172-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	02-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4737231</b>							
<b>WG3122641-2</b>	<b>LCS</b>							
Bromide (Br)			102.0		%		85-115	01-AUG-19
<b>WG3122641-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-AUG-19
<b>WG3122641-4</b>	<b>MS</b>	<b>L2320531-2</b>						
Bromide (Br)			112.7		%		75-125	01-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739211</b>							
<b>WG3123743-7</b>	<b>DUP</b>	<b>L2320531-3</b>						
Dissolved Organic Carbon		2.52	2.76		mg/L	9.3	20	02-AUG-19
<b>WG3123743-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.1		%		80-120	02-AUG-19
<b>WG3123743-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>WG3123743-8</b>	<b>MS</b>	<b>L2320531-4</b>						
Dissolved Organic Carbon			95.8		%		70-130	02-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739211</b>							
<b>WG3123743-7</b>	<b>DUP</b>	<b>L2320531-3</b>						
Total Organic Carbon		2.58	2.40		mg/L	7.0	20	02-AUG-19
<b>WG3123743-6</b>	<b>LCS</b>							
Total Organic Carbon			110.1		%		80-120	02-AUG-19
<b>WG3123743-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-AUG-19
<b>WG3123743-8</b>	<b>MS</b>	<b>L2320531-4</b>						
Total Organic Carbon			103.8		%		70-130	02-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4737231</b>							
<b>WG3122641-3</b>	<b>DUP</b>	<b>L2320531-2</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122641-2</b>	<b>LCS</b>							
Chloride (Cl)			103.1		%		90-110	01-AUG-19
<b>WG3122641-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-AUG-19
<b>WG3122641-4</b>	<b>MS</b>	<b>L2320531-2</b>						
Chloride (Cl)			111.2		%		75-125	01-AUG-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739898</b>							
<b>WG3124354-3</b>	<b>DUP</b>	<b>L2320531-3</b>						
Conductivity (@ 25C)		1300	1300		uS/cm	0.3	10	02-AUG-19
<b>WG3124354-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.3		%		90-110	02-AUG-19
<b>WG3124354-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	02-AUG-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4737231</b>							
<b>WG3122641-3</b>	<b>DUP</b>	<b>L2320531-2</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122641-2</b>	<b>LCS</b>							
Fluoride (F)			107.8		%		90-110	01-AUG-19
<b>WG3122641-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-AUG-19
<b>WG3122641-4</b>	<b>MS</b>	<b>L2320531-2</b>						
Fluoride (F)			112.6		%		75-125	01-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4739436</b>							
<b>WG3123697-7</b>	<b>DUP</b>	<b>L2320531-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-AUG-19
<b>WG3123697-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.4		%		80-120	04-AUG-19
<b>WG3123697-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	04-AUG-19
<b>WG3123697-8</b>	<b>MS</b>	<b>L2320531-3</b>						
Mercury (Hg)-Dissolved			93.0		%		70-130	04-AUG-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4739056</b>							
<b>WG3123563-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.1		%		80-120	03-AUG-19
<b>WG3123563-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	03-AUG-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4744566</b>							
<b>WG3127433-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			93.1		%		80-120	08-AUG-19
<b>WG3127433-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	08-AUG-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4744534</b>							
<b>WG3127340-7</b>	<b>DUP</b>	<b>L2320531-2</b>						
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-AUG-19
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	08-AUG-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-AUG-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4744534</b>							
<b>WG3127340-6</b>	<b>LCS</b>	<b>TMRM</b>						
Calcium (Ca)-Dissolved			93.2		%		80-120	08-AUG-19
Magnesium (Mg)-Dissolved			91.2		%		80-120	08-AUG-19
Potassium (K)-Dissolved			101.5		%		80-120	08-AUG-19
Sodium (Na)-Dissolved			99.1		%		80-120	08-AUG-19
<b>WG3127340-5</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-AUG-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.5		%		80-120	02-AUG-19
Antimony (Sb)-Dissolved			103.1		%		80-120	02-AUG-19
Arsenic (As)-Dissolved			103.0		%		80-120	02-AUG-19
Barium (Ba)-Dissolved			108.2		%		80-120	02-AUG-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	02-AUG-19
Boron (B)-Dissolved			103.0		%		80-120	02-AUG-19
Cadmium (Cd)-Dissolved			106.8		%		80-120	02-AUG-19
Calcium (Ca)-Dissolved			102.3		%		80-120	02-AUG-19
Chromium (Cr)-Dissolved			98.3		%		80-120	02-AUG-19
Cobalt (Co)-Dissolved			100.3		%		80-120	02-AUG-19
Copper (Cu)-Dissolved			99.6		%		80-120	02-AUG-19
Iron (Fe)-Dissolved			97.4		%		80-120	02-AUG-19
Lead (Pb)-Dissolved			99.9		%		80-120	02-AUG-19
Lithium (Li)-Dissolved			104.5		%		80-120	02-AUG-19
Magnesium (Mg)-Dissolved			103.5		%		80-120	02-AUG-19
Manganese (Mn)-Dissolved			100.8		%		80-120	02-AUG-19
Molybdenum (Mo)-Dissolved			102.4		%		80-120	02-AUG-19
Nickel (Ni)-Dissolved			99.99		%		80-120	02-AUG-19
Potassium (K)-Dissolved			97.5		%		80-120	02-AUG-19
Selenium (Se)-Dissolved			111.3		%		80-120	02-AUG-19
Silicon (Si)-Dissolved			104.3		%		60-140	02-AUG-19
Silver (Ag)-Dissolved			98.3		%		80-120	02-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			104.3		%		80-120	02-AUG-19
Strontium (Sr)-Dissolved			103.1		%		80-120	02-AUG-19
Thallium (Tl)-Dissolved			96.8		%		80-120	02-AUG-19
Tin (Sn)-Dissolved			101.8		%		80-120	02-AUG-19
Titanium (Ti)-Dissolved			100.3		%		80-120	02-AUG-19
Uranium (U)-Dissolved			99.6		%		80-120	02-AUG-19
Vanadium (V)-Dissolved			102.5		%		80-120	02-AUG-19
Zinc (Zn)-Dissolved			108.8		%		80-120	02-AUG-19
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122503-1</b>	<b>MB</b>	<b>NP</b>						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
<b>Batch</b>	<b>R4739185</b>							
<b>WG3123257-3</b>	<b>DUP</b>	<b>L2320531-4</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	02-AUG-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-AUG-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-AUG-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-AUG-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-AUG-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-AUG-19
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-AUG-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-AUG-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-AUG-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-AUG-19
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-AUG-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-AUG-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739185</b>							
<b>WG3123257-3</b>	<b>DUP</b>	<b>L2320531-4</b>						
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-AUG-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-AUG-19
<b>WG3123257-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.2		%		80-120	02-AUG-19
Antimony (Sb)-Dissolved			97.9		%		80-120	02-AUG-19
Arsenic (As)-Dissolved			104.1		%		80-120	02-AUG-19
Barium (Ba)-Dissolved			101.8		%		80-120	02-AUG-19
Bismuth (Bi)-Dissolved			94.5		%		80-120	02-AUG-19
Boron (B)-Dissolved			98.1		%		80-120	02-AUG-19
Cadmium (Cd)-Dissolved			101.2		%		80-120	02-AUG-19
Calcium (Ca)-Dissolved			98.8		%		80-120	02-AUG-19
Chromium (Cr)-Dissolved			100.8		%		80-120	02-AUG-19
Cobalt (Co)-Dissolved			102.1		%		80-120	02-AUG-19
Copper (Cu)-Dissolved			102.0		%		80-120	02-AUG-19
Iron (Fe)-Dissolved			100.1		%		80-120	02-AUG-19
Lead (Pb)-Dissolved			93.8		%		80-120	02-AUG-19
Lithium (Li)-Dissolved			96.6		%		80-120	02-AUG-19
Magnesium (Mg)-Dissolved			104.7		%		80-120	02-AUG-19
Manganese (Mn)-Dissolved			103.4		%		80-120	02-AUG-19
Molybdenum (Mo)-Dissolved			102.1		%		80-120	02-AUG-19
Nickel (Ni)-Dissolved			101.1		%		80-120	02-AUG-19
Potassium (K)-Dissolved			100.9		%		80-120	02-AUG-19
Selenium (Se)-Dissolved			102.9		%		80-120	02-AUG-19
Silicon (Si)-Dissolved			104.9		%		60-140	02-AUG-19
Silver (Ag)-Dissolved			97.1		%		80-120	02-AUG-19
Sodium (Na)-Dissolved			102.1		%		80-120	02-AUG-19
Strontium (Sr)-Dissolved			97.7		%		80-120	02-AUG-19
Thallium (Tl)-Dissolved			94.7		%		80-120	02-AUG-19
Tin (Sn)-Dissolved			100.6		%		80-120	02-AUG-19
Titanium (Ti)-Dissolved			98.9		%		80-120	02-AUG-19
Uranium (U)-Dissolved			96.7		%		80-120	02-AUG-19
Vanadium (V)-Dissolved			103.7		%		80-120	02-AUG-19
Zinc (Zn)-Dissolved			95.9		%		80-120	02-AUG-19
<b>WG3123257-1</b>	<b>MB</b>	<b>NP</b>						





## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4739185</b>							
<b>WG3123257-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	02-AUG-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122172-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.9		%		80-120	02-AUG-19
Antimony (Sb)-Total			107.4		%		80-120	02-AUG-19
Arsenic (As)-Total			102.6		%		80-120	02-AUG-19
Barium (Ba)-Total			104.7		%		80-120	02-AUG-19
Bismuth (Bi)-Total			97.7		%		80-120	02-AUG-19
Boron (B)-Total			107.0		%		80-120	02-AUG-19
Cadmium (Cd)-Total			104.9		%		80-120	02-AUG-19
Calcium (Ca)-Total			102.2		%		80-120	02-AUG-19
Chromium (Cr)-Total			98.6		%		80-120	02-AUG-19
Cobalt (Co)-Total			97.8		%		80-120	02-AUG-19
Copper (Cu)-Total			96.0		%		80-120	02-AUG-19
Iron (Fe)-Total			93.5		%		80-120	02-AUG-19
Lead (Pb)-Total			104.0		%		80-120	02-AUG-19
Lithium (Li)-Total			109.1		%		80-120	02-AUG-19
Magnesium (Mg)-Total			97.3		%		80-120	02-AUG-19
Manganese (Mn)-Total			100.7		%		80-120	02-AUG-19
Molybdenum (Mo)-Total			103.4		%		80-120	02-AUG-19
Nickel (Ni)-Total			99.0		%		80-120	02-AUG-19
Potassium (K)-Total			97.7		%		80-120	02-AUG-19
Selenium (Se)-Total			107.7		%		80-120	02-AUG-19
Silicon (Si)-Total			101.7		%		80-120	02-AUG-19
Silver (Ag)-Total			101.7		%		80-120	02-AUG-19
Sodium (Na)-Total			102.0		%		80-120	02-AUG-19
Strontium (Sr)-Total			105.9		%		80-120	02-AUG-19
Thallium (Tl)-Total			99.7		%		80-120	02-AUG-19
Tin (Sn)-Total			101.0		%		80-120	02-AUG-19
Titanium (Ti)-Total			101.0		%		80-120	02-AUG-19
Uranium (U)-Total			108.3		%		80-120	02-AUG-19
Vanadium (V)-Total			100.0		%		80-120	02-AUG-19
Zinc (Zn)-Total			108.4		%		80-120	02-AUG-19
<b>WG3122172-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	02-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4738194</b>							
<b>WG3122172-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	02-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	02-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	02-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	02-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	02-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	02-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	02-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	02-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	02-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4744620</b>							
<b>WG3127485-34</b>	<b>LCS</b>							
Ammonia as N			104.2		%		85-115	08-AUG-19
<b>WG3127485-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	08-AUG-19



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>		<b>Water</b>						
Batch	R4745662							
<b>WG3128733-18</b>	<b>LCS</b>							
Ammonia as N			104.3		%		85-115	09-AUG-19
<b>WG3128733-22</b>	<b>LCS</b>							
Ammonia as N			106.1		%		85-115	09-AUG-19
<b>WG3128733-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-AUG-19
<b>WG3128733-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	09-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4737231							
<b>WG3122641-3</b>	<b>DUP</b>	<b>L2320531-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122641-2</b>	<b>LCS</b>							
Nitrite (as N)			103.1		%		90-110	01-AUG-19
<b>WG3122641-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-AUG-19
<b>WG3122641-4</b>	<b>MS</b>	<b>L2320531-2</b>						
Nitrite (as N)			111.5		%		75-125	01-AUG-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4737231							
<b>WG3122641-3</b>	<b>DUP</b>	<b>L2320531-2</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-AUG-19
<b>WG3122641-2</b>	<b>LCS</b>							
Nitrate (as N)			101.3		%		90-110	01-AUG-19
<b>WG3122641-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-AUG-19
<b>WG3122641-4</b>	<b>MS</b>	<b>L2320531-2</b>						
Nitrate (as N)			109.3		%		75-125	01-AUG-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4739043							
<b>WG3123582-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	02-AUG-19
<b>WG3123582-2</b>	<b>DUP</b>	<b>L2320531-2</b>						
ORP		454	464	J	mV	10.8	15	02-AUG-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4738714							
WG3123197-14	LCS							
Phosphorus (P)-Total			111.0		%		80-120	02-AUG-19
WG3123197-13	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-AUG-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4739898							
WG3124354-3	DUP	L2320531-3						
pH		8.44	8.43	J	pH	0.01	0.2	02-AUG-19
WG3124354-2	LCS							
pH			7.04		pH		6.9-7.1	02-AUG-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4737938							
WG3121849-7	LCS							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	01-AUG-19
WG3121849-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-AUG-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4737231							
WG3122641-3	DUP	L2320531-2						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	01-AUG-19
WG3122641-2	LCS							
Sulfate (SO4)			101.1		%		90-110	01-AUG-19
WG3122641-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	01-AUG-19
WG3122641-4	MS	L2320531-2						
Sulfate (SO4)			109.1		%		75-125	01-AUG-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4739284							
WG3122691-2	LCS							
Total Dissolved Solids			95.0		%		85-115	02-AUG-19
WG3122691-1	MB							
Total Dissolved Solids			<10		mg/L		10	02-AUG-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4740213							
WG3124813-10	LCS							
Total Kjeldahl Nitrogen			88.6		%		75-125	06-AUG-19
WG3124813-14	LCS							



## Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4740213</b>							
<b>WG3124813-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.9		%		75-125	06-AUG-19
<b>WG3124813-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.5		%		75-125	06-AUG-19
<b>WG3124813-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.3		%		75-125	06-AUG-19
<b>WG3124813-20</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.9		%		75-125	06-AUG-19
<b>WG3124813-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.5		%		75-125	06-AUG-19
<b>WG3124813-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.7		%		75-125	06-AUG-19
<b>WG3124813-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-19</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>WG3124813-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4740155</b>							
<b>WG3122785-26</b>	<b>LCS</b>							
Total Suspended Solids			110.3		%		85-115	02-AUG-19
<b>WG3122785-25</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4734318</b>							
<b>WG3120639-43</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	31-JUL-19
<b>WG3120639-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-JUL-19

# Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2320531

Report Date: 10-AUG-19

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	30-JUL-19 12:25	02-AUG-19 08:00	0.25	68	hours	EHTR-FM
	2	30-JUL-19 12:00	02-AUG-19 08:00	0.25	68	hours	EHTR-FM
	3	30-JUL-19 12:00	02-AUG-19 08:00	0.25	68	hours	EHTR-FM
	4	30-JUL-19 15:00	02-AUG-19 08:00	0.25	65	hours	EHTR-FM
pH							
	1	30-JUL-19 12:25	02-AUG-19 10:00	0.25	70	hours	EHTR-FM
	2	30-JUL-19 12:00	02-AUG-19 10:00	0.25	70	hours	EHTR-FM
	3	30-JUL-19 12:00	02-AUG-19 10:00	0.25	70	hours	EHTR-FM
	4	30-JUL-19 15:00	02-AUG-19 10:00	0.25	67	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2320531 were received on 31-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> GHO_QTR_GW_2019-07-01		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jenni Kropp				Lab Contact Lyudmyla Shvets			Excel PDF EDD		
Email jennifer.kropp@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com			Email 1: DL-EQUIS-GHO-Field@teck.com X X X		
Address P.O. BOX 5000				Address 2559 29 Street NE			Email 2: teckcoal@equisonline.com X		
City Elkford Province BC				City Calgary Province AB			Email 3:		
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Canada			Email 4:		
Phone Number 250-865-3048				Phone Number 403 407 1794			PO number		

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N				
GH_GA-MW-1_WG_2019-07-01_NP	GH_GA-MW-1	WG		2019/07/30	12:25	G	8	1	1	1	1	1	1	1	1				
GH_GWB1_WG_2019-07-01_NP	GH_GWB1	WG		2019/07/30		G	5		1		1		1	1	1				
GH_GWD1_WG_2019-07-01_NP	GH_GWD1	WG		2019/07/30		G	8	1	1	1	1	1	1	1	1				
GH_TRIPGW_WG_2019-07-01_NP	GH_TRIPGW	WG		2019/07/30	15:00	G	7	1	1	1	1	1	1		1				

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			PK	7/31 0900

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default) X	<b>Sampler's Name</b>	<b>Mobile #</b>	
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>	<b>Date/Time</b>	
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

100



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 23-AUG-19  
Report Date: 05-SEP-19 11:51 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2334696  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-1 GH_POTW10_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 11:55							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
Iron Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Total Kjeldahl Nitrogen	0.063		0.050	mg/L		30-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00099		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.0190		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.036		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	0.0090		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	88.2		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	0.506		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	0.000054		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0160		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	41.5		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.0527		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.00281		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	0.00293		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	1.69		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	3.03		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	4.82		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	5.07		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	0.500		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.000756		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	391		0.50	mg/L		28-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-1 GH_POTW10_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 11:55							
Matrix: WG							
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	0.00115		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	0.0193		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	0.038		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	0.0102		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	91.1		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	0.19		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	0.628		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	0.000251		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	0.0163		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	41.5		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	0.0528		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	0.00302		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	0.00337		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	1.71		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	2.86		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	4.84		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	5.22		0.050	mg/L		27-AUG-19	R4771259
Strontium (Sr)-Total	0.536		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	0.000676		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.0		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	209		1.0	mg/L		27-AUG-19	R4769709
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4769709
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4769709
Alkalinity, Total (as CaCO3)	209		1.0	mg/L		27-AUG-19	R4769709
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0671		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.04		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	692		2.0	uS/cm		27-AUG-19	R4769709
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.808		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Ion Balance	97.7		-100	%		28-AUG-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-1 GH_POTW10_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 11:55 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.2			%		28-AUG-19	
Anion Sum	8.30			meq/L		28-AUG-19	
Cation Sum	8.11			meq/L		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.288		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0132		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	364		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	187		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	474	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.2		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	7.16		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.16		0.10	pH		27-AUG-19	R4769709
L2334696-2 GH_POTW15_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 12:25 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.91		0.50	mg/L		26-AUG-19	R4769509
Iron Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Total Kjeldahl Nitrogen	0.142		0.050	mg/L		01-SEP-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	0.94		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-19	28-AUG-19	R4772449
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-19	28-AUG-19	R4772449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Arsenic (As)-Dissolved	0.00177		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Barium (Ba)-Dissolved	0.0222		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Boron (B)-Dissolved	0.021		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cadmium (Cd)-Dissolved	0.0116		0.0050	ug/L	27-AUG-19	28-AUG-19	R4772449
Calcium (Ca)-Dissolved	129		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-2 GH_POTW15_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:25							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	27-AUG-19	28-AUG-19	R4772449
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Iron (Fe)-Dissolved	0.858		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Lithium (Li)-Dissolved	0.0151		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
Magnesium (Mg)-Dissolved	48.5		0.10	mg/L	27-AUG-19	28-AUG-19	R4772449
Manganese (Mn)-Dissolved	0.192		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Molybdenum (Mo)-Dissolved	0.00236		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Nickel (Ni)-Dissolved	0.00093		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Potassium (K)-Dissolved	1.57		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-AUG-19	28-AUG-19	R4772449
Silicon (Si)-Dissolved	4.45		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Sodium (Na)-Dissolved	11.4		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Strontium (Sr)-Dissolved	0.374		0.00020	mg/L	27-AUG-19	28-AUG-19	R4772449
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Uranium (U)-Dissolved	0.00131		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
<b>Hardness</b>							
Hardness (as CaCO3)	523		0.50	mg/L		28-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	0.00186		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	0.0241		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	0.021		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	0.0252		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	129		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	0.24		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	0.851		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	0.0149		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	46.8		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	0.201		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	0.00263		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	0.00101		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	1.62		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	0.071		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	4.32		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	11.7		0.050	mg/L		27-AUG-19	R4771259

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-2 GH_POTW15_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:25							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Strontium (Sr)-Total	0.408		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	0.000017		0.000010	mg/L		27-AUG-19	R4771259
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	0.00134		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	10.9		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	238		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	238		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0873		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.085		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	29.0		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	912		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.174		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.6			%		28-AUG-19	
Anion Sum	10.9			meq/L		28-AUG-19	
Cation Sum	11.0			meq/L		28-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0118		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation reduction potential by elect.</b>							
ORP	316		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	256		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	670	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.8		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	10.4		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.08		0.10	pH		27-AUG-19	R4771848

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-3 GH_POTW17_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 10:40							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.80		0.50	mg/L		26-AUG-19	R4769509
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		23-AUG-19	R4780616
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Total Kjeldahl Nitrogen	0.051		0.050	mg/L		30-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	0.82		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-19	28-AUG-19	R4772449
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-19	28-AUG-19	R4772449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Barium (Ba)-Dissolved	0.0309		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Boron (B)-Dissolved	0.022		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cadmium (Cd)-Dissolved	0.0498		0.0050	ug/L	27-AUG-19	28-AUG-19	R4772449
Calcium (Ca)-Dissolved	191		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	27-AUG-19	28-AUG-19	R4772449
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Iron (Fe)-Dissolved	0.130		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Lithium (Li)-Dissolved	0.0137		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
Magnesium (Mg)-Dissolved	88.5		0.10	mg/L	27-AUG-19	28-AUG-19	R4772449
Manganese (Mn)-Dissolved	0.0611		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Molybdenum (Mo)-Dissolved	0.000971		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Nickel (Ni)-Dissolved	0.00726		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Potassium (K)-Dissolved	1.71		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Selenium (Se)-Dissolved	10.3		0.050	ug/L	27-AUG-19	28-AUG-19	R4772449
Silicon (Si)-Dissolved	4.78		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Sodium (Na)-Dissolved	8.95		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Strontium (Sr)-Dissolved	0.445		0.00020	mg/L	27-AUG-19	28-AUG-19	R4772449
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Uranium (U)-Dissolved	0.00226		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Zinc (Zn)-Dissolved	0.0062		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
<b>Hardness</b>							
Hardness (as CaCO3)	841		0.50	mg/L		28-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-3 GH_POTW17_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 10:40							
Matrix: WG							
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.000050		0.000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	0.00018		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	0.0326		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	0.020		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	0.0515		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	184		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	0.16		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	0.138		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	0.000051		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	0.0132		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	80.5		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	0.0616		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	0.00107		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	0.00765		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	1.69		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	8.68		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	4.51		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	8.63		0.050	mg/L		27-AUG-19	R4771259
Strontium (Sr)-Total	0.477		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Tin (Sn)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	0.00239		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	0.0058		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	16.4		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	290		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	290		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0298		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	17.8	DLHC	2.5	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1250		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		26-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.6			%		28-AUG-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-3 GH_POTW17_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 10:40 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	16.4			meq/L		28-AUG-19	
Cation Sum	17.2			meq/L		28-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	105		-100	%		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.398	DLHC	0.025	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	451		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	482	DLHC	1.5	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	998	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	1.31		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.05		0.10	pH		27-AUG-19	R4771848
L2334696-4 GH_POTW06_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 11:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.84		0.50	mg/L		26-AUG-19	R4769509
Iron Bacteria	9000	IRB:BC	1.0	CFU/mL		23-AUG-19	R4780616
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Total Kjeldahl Nitrogen	0.249		0.050	mg/L		30-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	0.82		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-AUG-19	30-AUG-19	R4778439
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4777879
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4777879
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-AUG-19	30-AUG-19	R4778439
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Barium (Ba)-Dissolved	0.0548		0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	30-AUG-19	R4778439
Boron (B)-Dissolved	0.014		0.010	mg/L	30-AUG-19	30-AUG-19	R4778439
Cadmium (Cd)-Dissolved	0.0426		0.0050	ug/L	30-AUG-19	30-AUG-19	R4778439
Calcium (Ca)-Dissolved	173		0.050	mg/L	30-AUG-19	30-AUG-19	R4778439

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-4 GH_POTW06_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 11:10							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-AUG-19	30-AUG-19	R4778439
Copper (Cu)-Dissolved	0.00642	DTC	0.00050	mg/L	30-AUG-19	30-AUG-19	R4778439
Iron (Fe)-Dissolved	0.046	DTC	0.010	mg/L	30-AUG-19	30-AUG-19	R4778439
Lead (Pb)-Dissolved	0.000761	DTC	0.000050	mg/L	30-AUG-19	30-AUG-19	R4778439
Lithium (Li)-Dissolved	0.0119		0.0010	mg/L	30-AUG-19	30-AUG-19	R4778439
Magnesium (Mg)-Dissolved	97.2		0.10	mg/L	30-AUG-19	30-AUG-19	R4778439
Manganese (Mn)-Dissolved	0.00329	DTC	0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Molybdenum (Mo)-Dissolved	0.000808		0.000050	mg/L	30-AUG-19	30-AUG-19	R4778439
Nickel (Ni)-Dissolved	0.00092		0.00050	mg/L	30-AUG-19	30-AUG-19	R4778439
Potassium (K)-Dissolved	1.56		0.050	mg/L	30-AUG-19	30-AUG-19	R4778439
Selenium (Se)-Dissolved	32.4		0.050	ug/L	30-AUG-19	30-AUG-19	R4778439
Silicon (Si)-Dissolved	4.13		0.050	mg/L	30-AUG-19	30-AUG-19	R4778439
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-AUG-19	30-AUG-19	R4778439
Sodium (Na)-Dissolved	7.34		0.050	mg/L	30-AUG-19	30-AUG-19	R4778439
Strontium (Sr)-Dissolved	0.309		0.00020	mg/L	30-AUG-19	30-AUG-19	R4778439
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	30-AUG-19	30-AUG-19	R4778439
Tin (Sn)-Dissolved	0.00020		0.00010	mg/L	30-AUG-19	30-AUG-19	R4778439
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-AUG-19	30-AUG-19	R4778439
Uranium (U)-Dissolved	0.00352		0.000010	mg/L	30-AUG-19	30-AUG-19	R4778439
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-AUG-19	30-AUG-19	R4778439
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	30-AUG-19	30-AUG-19	R4778439
<b>Hardness</b>							
Hardness (as CaCO3)	832		0.50	mg/L		31-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-AUG-19	R4778896
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		31-AUG-19	R4778896
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4778896
Arsenic (As)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4778896
Barium (Ba)-Total	0.0538		0.00010	mg/L		31-AUG-19	R4778896
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-AUG-19	R4778896
Boron (B)-Total	0.015		0.010	mg/L		31-AUG-19	R4778896
Cadmium (Cd)-Total	0.0446		0.0050	ug/L		31-AUG-19	R4778896
Calcium (Ca)-Total	173		0.050	mg/L		31-AUG-19	R4778896
Chromium (Cr)-Total	0.00017		0.00010	mg/L		31-AUG-19	R4778896
Cobalt (Co)-Total	<0.10		0.10	ug/L		31-AUG-19	R4778896
Copper (Cu)-Total	0.00183		0.00050	mg/L		31-AUG-19	R4778896
Iron (Fe)-Total	0.012		0.010	mg/L		31-AUG-19	R4778896
Lead (Pb)-Total	0.000218		0.000050	mg/L		31-AUG-19	R4778896
Lithium (Li)-Total	0.0120		0.0010	mg/L		31-AUG-19	R4778896
Magnesium (Mg)-Total	94.7		0.10	mg/L		31-AUG-19	R4778896
Manganese (Mn)-Total	0.00150		0.00010	mg/L		31-AUG-19	R4778896
Molybdenum (Mo)-Total	0.000846		0.000050	mg/L		31-AUG-19	R4778896
Nickel (Ni)-Total	0.00076		0.00050	mg/L		31-AUG-19	R4778896
Potassium (K)-Total	1.47		0.050	mg/L		31-AUG-19	R4778896
Selenium (Se)-Total	32.0		0.050	ug/L		31-AUG-19	R4778896
Silicon (Si)-Total	4.26		0.10	mg/L		31-AUG-19	R4778896
Silver (Ag)-Total	<0.000010		0.000010	mg/L		31-AUG-19	R4778896

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-4 GH_POTW06_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 11:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Total	7.50		0.050	mg/L		31-AUG-19	R4778896
Strontium (Sr)-Total	0.321		0.00020	mg/L		31-AUG-19	R4778896
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		31-AUG-19	R4778896
Tin (Sn)-Total	0.00012		0.00010	mg/L		31-AUG-19	R4778896
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-AUG-19	R4778896
Uranium (U)-Total	0.00331		0.000010	mg/L		31-AUG-19	R4778896
Vanadium (V)-Total	<0.00050		0.00050	mg/L		31-AUG-19	R4778896
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		31-AUG-19	R4778896
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	15.5		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	297		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	297		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0103		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	17.4	DLHC	2.5	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		26-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.2			%		31-AUG-19	
Anion Sum	16.9			meq/L		31-AUG-19	
Cation Sum	17.0			meq/L		31-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		31-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.35	DLHC	0.025	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0015		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	429		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	498	DLHC	1.5	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1030	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	0.29		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.11		0.10	pH		27-AUG-19	R4771848

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-4 GH_POTW06_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 11:10 Matrix: WG							
L2334696-5 GH_POTW09_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 12:40 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
Iron Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		23-AUG-19	R4780616
Total Kjeldahl Nitrogen	0.084		0.050	mg/L		31-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-19	28-AUG-19	R4772449
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-19	28-AUG-19	R4772449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Arsenic (As)-Dissolved	0.00053		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Barium (Ba)-Dissolved	0.0336		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Boron (B)-Dissolved	0.021		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cadmium (Cd)-Dissolved	0.0052		0.0050	ug/L	27-AUG-19	28-AUG-19	R4772449
Calcium (Ca)-Dissolved	104		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	27-AUG-19	28-AUG-19	R4772449
Copper (Cu)-Dissolved	0.00069		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Iron (Fe)-Dissolved	0.148		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Lithium (Li)-Dissolved	0.0126		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
Magnesium (Mg)-Dissolved	46.9		0.10	mg/L	27-AUG-19	28-AUG-19	R4772449
Manganese (Mn)-Dissolved	0.196		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Molybdenum (Mo)-Dissolved	0.00242		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Nickel (Ni)-Dissolved	0.00084		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Potassium (K)-Dissolved	1.64		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Selenium (Se)-Dissolved	1.19		0.050	ug/L	27-AUG-19	28-AUG-19	R4772449
Silicon (Si)-Dissolved	5.15		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Sodium (Na)-Dissolved	8.00		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Strontium (Sr)-Dissolved	0.337		0.00020	mg/L	27-AUG-19	28-AUG-19	R4772449
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Uranium (U)-Dissolved	0.00209		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
<b>Hardness</b>							
Hardness (as CaCO3)	453		0.50	mg/L		28-AUG-19	
<b>Total Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-5 GH_POTW09_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:40							
Matrix: WG							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	0.00052		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	0.0360		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	0.020		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	0.0077		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	98.3		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	0.19		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	0.00073		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	0.164		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	0.0118		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	42.9		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	0.194		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	0.00262		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	0.00082		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	1.63		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	1.10		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	4.78		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	7.46		0.050	mg/L		27-AUG-19	R4771259
Strontium (Sr)-Total	0.353		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	0.000017		0.000010	mg/L		27-AUG-19	R4771259
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	0.00220		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.6		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	257		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	257		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0663		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.68		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	736		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.784		0.020	mg/L		23-AUG-19	R4769110

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-5 GH_POTW09_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 12:40 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	106		-100	%		28-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.8			%		28-AUG-19	
Anion Sum	8.94			meq/L		28-AUG-19	
Cation Sum	9.45			meq/L		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0134		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	268		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	171		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	493	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	0.97		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.16		0.10	pH		27-AUG-19	R4771848
L2334696-6 GH_GWD2_WG_2019-07-01_NP Sampled By: CLIENT on 22-AUG-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
Total Kjeldahl Nitrogen	0.086		0.050	mg/L		30-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-19	28-AUG-19	R4772449
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-19	28-AUG-19	R4772449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Arsenic (As)-Dissolved	0.00101		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Barium (Ba)-Dissolved	0.0182		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Boron (B)-Dissolved	0.040		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cadmium (Cd)-Dissolved	0.0091		0.0050	ug/L	27-AUG-19	28-AUG-19	R4772449
Calcium (Ca)-Dissolved	94.4		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-6 GH_GWD2_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	27-AUG-19	28-AUG-19	R4772449
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Iron (Fe)-Dissolved	0.489		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Lithium (Li)-Dissolved	0.0169		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
Magnesium (Mg)-Dissolved	46.1		0.10	mg/L	27-AUG-19	28-AUG-19	R4772449
Manganese (Mn)-Dissolved	0.0530		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Molybdenum (Mo)-Dissolved	0.00280		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Nickel (Ni)-Dissolved	0.00221		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Potassium (K)-Dissolved	1.70		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Selenium (Se)-Dissolved	2.93		0.050	ug/L	27-AUG-19	28-AUG-19	R4772449
Silicon (Si)-Dissolved	5.06		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Sodium (Na)-Dissolved	5.43		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Strontium (Sr)-Dissolved	0.512		0.00020	mg/L	27-AUG-19	28-AUG-19	R4772449
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Uranium (U)-Dissolved	0.000666		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Zinc (Zn)-Dissolved	0.0036		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
<b>Hardness</b>							
Hardness (as CaCO3)	425		0.50	mg/L		29-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	0.00107		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	0.0198		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	0.037		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	0.0132		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	89.7		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	0.18		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	0.610		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	0.000198		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	0.0161		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	41.4		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	0.0519		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	0.00305		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	0.00215		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	1.69		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	2.71		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	4.71		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	5.09		0.050	mg/L		27-AUG-19	R4771259

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-6 GH_GWD2_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Strontium (Sr)-Total	0.540		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-AUG-19	R4773790
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	0.000687		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.1		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	214		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	214		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0552		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.01		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	706		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.806		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.8			%		29-AUG-19	
Anion Sum	8.34			meq/L		29-AUG-19	
Cation Sum	8.81			meq/L		29-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	106		-100	%		29-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.288		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0132		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation reduction potential by elect.</b>							
ORP	294		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	184		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	478	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	5.43		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.15		0.10	pH		27-AUG-19	R4771848

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-7 GH_GWB2_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		30-AUG-19	R4778448
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-AUG-19	R4775408
Total Organic Carbon	<0.50		0.50	mg/L		26-AUG-19	R4769509
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-AUG-19	28-AUG-19	R4772449
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-AUG-19	R4770200
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-AUG-19	28-AUG-19	R4772449
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Boron (B)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	27-AUG-19	28-AUG-19	R4772449
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-AUG-19	28-AUG-19	R4772449
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	27-AUG-19	28-AUG-19	R4772449
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	27-AUG-19	28-AUG-19	R4772449
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Potassium (K)-Dissolved	<0.050		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	27-AUG-19	28-AUG-19	R4772449
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	27-AUG-19	28-AUG-19	R4772449
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	27-AUG-19	28-AUG-19	R4772449
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-AUG-19	28-AUG-19	R4772449
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-AUG-19	28-AUG-19	R4772449
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	27-AUG-19	28-AUG-19	R4772449
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-AUG-19	28-AUG-19	R4772449
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	27-AUG-19	28-AUG-19	R4772449
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		27-AUG-19	R4771259
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-AUG-19	R4775448
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-7 GH_GWB2_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Arsenic (As)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Barium (Ba)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Boron (B)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		27-AUG-19	R4771259
Calcium (Ca)-Total	<0.050		0.050	mg/L		27-AUG-19	R4771259
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-AUG-19	R4771259
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Iron (Fe)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Lithium (Li)-Total	<0.0010		0.0010	mg/L		27-AUG-19	R4771259
Magnesium (Mg)-Total	<0.10		0.10	mg/L		27-AUG-19	R4771259
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		27-AUG-19	R4771259
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Potassium (K)-Total	<0.050		0.050	mg/L		27-AUG-19	R4771259
Selenium (Se)-Total	<0.050		0.050	ug/L		27-AUG-19	R4771259
Silicon (Si)-Total	<0.10		0.10	mg/L		27-AUG-19	R4771259
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Sodium (Na)-Total	<0.050		0.050	mg/L		27-AUG-19	R4771259
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		27-AUG-19	R4771259
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-AUG-19	R4771259
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-AUG-19	R4771259
Uranium (U)-Total	<0.000010		0.000010	mg/L		27-AUG-19	R4771259
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-AUG-19	R4771259
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-AUG-19	R4771259
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-AUG-19	R4771848
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		28-AUG-19	R4776248
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-AUG-19	R4771848
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-AUG-19	
Anion Sum	<0.10			meq/L		28-AUG-19	
Cation Sum	<0.10			meq/L		28-AUG-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334696-7 GH_GWB2_WG_2019-07-01_NP							
Sampled By: CLIENT on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	402		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-AUG-19	R4777613
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	5.55		0.10	pH		27-AUG-19	R4771848

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
IRB:BC	Brown Cloudy: IRB dominant
IRB:BR	Brown Ring: IRB dominant
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
Iron Related Bacteria- IRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.





## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 1 of 19

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769704</b>							
<b>WG3144261-9</b>	<b>DUP</b>	<b>L2334696-7</b>						
Acidity (as CaCO3)		<1.0	1.7	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3144261-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.6		%		85-115	26-AUG-19
<b>WG3144261-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	26-AUG-19
<b>WG3144261-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.2		%		85-115	26-AUG-19
<b>WG3144261-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>WG3144261-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>WG3144261-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769709</b>							
<b>WG3144676-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-19
<b>Batch</b>	<b>R4771848</b>							
<b>WG3145505-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	27-AUG-19
<b>WG3145505-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-19
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.7		%		80-120	28-AUG-19
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 2 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-VA</b>								
Water								
Batch	R4778439							
<b>WG3148072-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			108.1		%		80-120	30-AUG-19
<b>WG3148072-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-AUG-19
<b>WG3148072-4</b>	<b>MS</b>	<b>L2334696-4</b>						
Beryllium (Be)-Dissolved			95.5		%		70-130	30-AUG-19
<b>BE-T-L-CCMS-VA</b>								
Water								
Batch	R4771259							
<b>WG3144143-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.7		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-AUG-19
Batch	R4778896							
<b>WG3148916-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			95.2		%		80-120	31-AUG-19
<b>WG3148916-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-AUG-19
<b>BR-L-IC-N-CL</b>								
Water								
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Bromide (Br)			99.6		%		85-115	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
Water								
Batch	R4769509							
<b>WG3144493-3</b>	<b>DUP</b>	<b>L2334696-6</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3144493-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.4		%		80-120	26-AUG-19
<b>WG3144493-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>WG3144493-4</b>	<b>MS</b>	<b>L2334696-7</b>						
Dissolved Organic Carbon			108.9		%		70-130	26-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
Water								



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 3 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769509</b>							
<b>WG3144493-3</b>	<b>DUP</b>	<b>L2334696-6</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3144493-2</b>	<b>LCS</b>							
Total Organic Carbon			103.9		%		80-120	26-AUG-19
<b>WG3144493-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>WG3144493-4</b>	<b>MS</b>	<b>L2334696-7</b>						
Total Organic Carbon			109.7		%		70-130	26-AUG-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-10</b>	<b>LCS</b>							
Chloride (Cl)			103.6		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769709</b>							
<b>WG3144676-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-19
<b>Batch</b>	<b>R4771848</b>							
<b>WG3145505-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.1		%		90-110	27-AUG-19
<b>WG3145505-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-10</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4777943</b>							
<b>WG3146604-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.3		%		80-120	30-AUG-19
<b>WG3146604-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 4 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4775448</b>							
<b>WG3146694-3</b>	<b>DUP</b>	<b>L2334696-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	29-AUG-19
<b>WG3146694-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.4		%		80-120	29-AUG-19
<b>WG3146694-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	29-AUG-19
<b>WG3146694-4</b>	<b>MS</b>	<b>L2334696-2</b>						
Mercury (Hg)-Total			102.8		%		70-130	29-AUG-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4775408</b>							
<b>WG3146247-3</b>	<b>DUP</b>	<b>L2334696-2</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	28-AUG-19
<b>WG3146247-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			94.3		%		80-120	28-AUG-19
<b>WG3146247-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-AUG-19
<b>IB-BART-SQ-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4780616</b>							
<b>WG3150122-2</b>	<b>DUP</b>	<b>L2334696-1</b>						
Iron Bacteria		<1.0	<1.0	RPD-NA	CFU/mL	N/A	50	23-AUG-19
<b>WG3150122-1</b>	<b>MB</b>							
Iron Bacteria			<1.0		CFU/mL		1	23-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.7		%		80-120	26-AUG-19
Antimony (Sb)-Dissolved			95.1		%		80-120	26-AUG-19
Arsenic (As)-Dissolved			97.7		%		80-120	26-AUG-19
Barium (Ba)-Dissolved			99.8		%		80-120	26-AUG-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	26-AUG-19
Boron (B)-Dissolved			97.2		%		80-120	26-AUG-19
Cadmium (Cd)-Dissolved			97.3		%		80-120	26-AUG-19
Calcium (Ca)-Dissolved			94.0		%		80-120	26-AUG-19
Chromium (Cr)-Dissolved			99.2		%		80-120	26-AUG-19
Cobalt (Co)-Dissolved			97.8		%		80-120	26-AUG-19
Copper (Cu)-Dissolved			98.2		%		80-120	26-AUG-19
Iron (Fe)-Dissolved			100.6		%		80-120	26-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 5 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			98.1		%		80-120	26-AUG-19
Lithium (Li)-Dissolved			96.8		%		80-120	26-AUG-19
Magnesium (Mg)-Dissolved			98.0		%		80-120	26-AUG-19
Manganese (Mn)-Dissolved			99.4		%		80-120	26-AUG-19
Molybdenum (Mo)-Dissolved			94.0		%		80-120	26-AUG-19
Nickel (Ni)-Dissolved			98.4		%		80-120	26-AUG-19
Potassium (K)-Dissolved			98.9		%		80-120	26-AUG-19
Selenium (Se)-Dissolved			98.5		%		80-120	26-AUG-19
Silicon (Si)-Dissolved			99.8		%		60-140	26-AUG-19
Silver (Ag)-Dissolved			93.7		%		80-120	26-AUG-19
Sodium (Na)-Dissolved			103.6		%		80-120	26-AUG-19
Strontium (Sr)-Dissolved			98.6		%		80-120	26-AUG-19
Thallium (Tl)-Dissolved			99.1		%		80-120	26-AUG-19
Tin (Sn)-Dissolved			94.9		%		80-120	26-AUG-19
Titanium (Ti)-Dissolved			94.3		%		80-120	26-AUG-19
Uranium (U)-Dissolved			103.3		%		80-120	26-AUG-19
Vanadium (V)-Dissolved			100.6		%		80-120	26-AUG-19
Zinc (Zn)-Dissolved			99.8		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 6 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.1		%		80-120	28-AUG-19
Antimony (Sb)-Dissolved			97.1		%		80-120	28-AUG-19
Arsenic (As)-Dissolved			100.2		%		80-120	28-AUG-19
Barium (Ba)-Dissolved			100.6		%		80-120	28-AUG-19
Bismuth (Bi)-Dissolved			106.2		%		80-120	28-AUG-19
Boron (B)-Dissolved			104.7		%		80-120	28-AUG-19
Cadmium (Cd)-Dissolved			99.7		%		80-120	28-AUG-19
Calcium (Ca)-Dissolved			100.3		%		80-120	28-AUG-19
Chromium (Cr)-Dissolved			101.0		%		80-120	28-AUG-19
Cobalt (Co)-Dissolved			100.7		%		80-120	28-AUG-19
Copper (Cu)-Dissolved			101.2		%		80-120	28-AUG-19
Iron (Fe)-Dissolved			104.9		%		80-120	28-AUG-19
Lead (Pb)-Dissolved			100.1		%		80-120	28-AUG-19
Lithium (Li)-Dissolved			99.5		%		80-120	28-AUG-19
Magnesium (Mg)-Dissolved			103.0		%		80-120	28-AUG-19
Manganese (Mn)-Dissolved			101.6		%		80-120	28-AUG-19
Molybdenum (Mo)-Dissolved			100.4		%		80-120	28-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 7 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			100.2		%		80-120	28-AUG-19
Potassium (K)-Dissolved			98.5		%		80-120	28-AUG-19
Selenium (Se)-Dissolved			100.9		%		80-120	28-AUG-19
Silicon (Si)-Dissolved			106.7		%		60-140	28-AUG-19
Silver (Ag)-Dissolved			95.7		%		80-120	28-AUG-19
Sodium (Na)-Dissolved			106.6		%		80-120	28-AUG-19
Strontium (Sr)-Dissolved			94.3		%		80-120	28-AUG-19
Thallium (Tl)-Dissolved			101.9		%		80-120	28-AUG-19
Tin (Sn)-Dissolved			98.0		%		80-120	28-AUG-19
Titanium (Ti)-Dissolved			100.2		%		80-120	28-AUG-19
Uranium (U)-Dissolved			97.4		%		80-120	28-AUG-19
Vanadium (V)-Dissolved			102.4		%		80-120	28-AUG-19
Zinc (Zn)-Dissolved			101.7		%		80-120	28-AUG-19
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 8 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
<b>Batch</b>	<b>R4778439</b>							
<b>WG3148072-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.1		%		80-120	30-AUG-19
Antimony (Sb)-Dissolved			94.8		%		80-120	30-AUG-19
Arsenic (As)-Dissolved			97.6		%		80-120	30-AUG-19
Barium (Ba)-Dissolved			103.4		%		80-120	30-AUG-19
Bismuth (Bi)-Dissolved			98.8		%		80-120	30-AUG-19
Boron (B)-Dissolved			101.6		%		80-120	30-AUG-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	30-AUG-19
Calcium (Ca)-Dissolved			102.4		%		80-120	30-AUG-19
Chromium (Cr)-Dissolved			101.0		%		80-120	30-AUG-19
Cobalt (Co)-Dissolved			100.0		%		80-120	30-AUG-19
Copper (Cu)-Dissolved			99.6		%		80-120	30-AUG-19
Iron (Fe)-Dissolved			102.6		%		80-120	30-AUG-19
Lead (Pb)-Dissolved			97.6		%		80-120	30-AUG-19
Lithium (Li)-Dissolved			106.3		%		80-120	30-AUG-19
Magnesium (Mg)-Dissolved			103.9		%		80-120	30-AUG-19
Manganese (Mn)-Dissolved			102.8		%		80-120	30-AUG-19
Molybdenum (Mo)-Dissolved			99.9		%		80-120	30-AUG-19
Nickel (Ni)-Dissolved			99.5		%		80-120	30-AUG-19
Potassium (K)-Dissolved			102.2		%		80-120	30-AUG-19
Selenium (Se)-Dissolved			102.4		%		80-120	30-AUG-19
Silicon (Si)-Dissolved			105.3		%		60-140	30-AUG-19
Silver (Ag)-Dissolved			95.1		%		80-120	30-AUG-19





## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 9 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778439</b>							
<b>WG3148072-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			107.6		%		80-120	30-AUG-19
Strontium (Sr)-Dissolved			102.4		%		80-120	30-AUG-19
Thallium (Tl)-Dissolved			99.8		%		80-120	30-AUG-19
Tin (Sn)-Dissolved			95.5		%		80-120	30-AUG-19
Titanium (Ti)-Dissolved			98.3		%		80-120	30-AUG-19
Uranium (U)-Dissolved			99.96		%		80-120	30-AUG-19
Vanadium (V)-Dissolved			101.6		%		80-120	30-AUG-19
Zinc (Zn)-Dissolved			96.9		%		80-120	30-AUG-19
<b>WG3148072-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 10 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778439</b>							
<b>WG3148072-1</b>	<b>MB</b>	<b>NP</b>						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
<b>WG3148072-4</b>	<b>MS</b>	<b>L2334696-4</b>						
Aluminum (Al)-Dissolved			100.8		%		70-130	30-AUG-19
Antimony (Sb)-Dissolved			97.1		%		70-130	30-AUG-19
Arsenic (As)-Dissolved			98.0		%		70-130	30-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Bismuth (Bi)-Dissolved			91.9		%		70-130	30-AUG-19
Boron (B)-Dissolved			97.7		%		70-130	30-AUG-19
Cadmium (Cd)-Dissolved			96.3		%		70-130	30-AUG-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Chromium (Cr)-Dissolved			101.0		%		70-130	30-AUG-19
Cobalt (Co)-Dissolved			96.8		%		70-130	30-AUG-19
Copper (Cu)-Dissolved			93.2		%		70-130	30-AUG-19
Iron (Fe)-Dissolved			99.4		%		70-130	30-AUG-19
Lead (Pb)-Dissolved			95.0		%		70-130	30-AUG-19
Lithium (Li)-Dissolved			96.1		%		70-130	30-AUG-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Manganese (Mn)-Dissolved			97.4		%		70-130	30-AUG-19
Molybdenum (Mo)-Dissolved			100.1		%		70-130	30-AUG-19
Nickel (Ni)-Dissolved			93.5		%		70-130	30-AUG-19
Potassium (K)-Dissolved			99.8		%		70-130	30-AUG-19
Selenium (Se)-Dissolved			115.3		%		70-130	30-AUG-19
Silicon (Si)-Dissolved			94.9		%		70-130	30-AUG-19
Silver (Ag)-Dissolved			94.7		%		70-130	30-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Thallium (Tl)-Dissolved			96.9		%		70-130	30-AUG-19
Tin (Sn)-Dissolved			95.1		%		70-130	30-AUG-19
Titanium (Ti)-Dissolved			101.3		%		70-130	30-AUG-19
Uranium (U)-Dissolved			102.4		%		70-130	30-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 11 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778439</b>							
<b>WG3148072-4 MS</b>		<b>L2334696-4</b>						
Vanadium (V)-Dissolved			104.0		%		70-130	30-AUG-19
Zinc (Zn)-Dissolved			93.7		%		70-130	30-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2 LCS</b>								
Aluminum (Al)-Total			106.5		%		80-120	27-AUG-19
Antimony (Sb)-Total			98.6		%		80-120	27-AUG-19
Arsenic (As)-Total			103.1		%		80-120	27-AUG-19
Barium (Ba)-Total			106.5		%		80-120	27-AUG-19
Bismuth (Bi)-Total			96.0		%		80-120	27-AUG-19
Boron (B)-Total			99.3		%		80-120	27-AUG-19
Cadmium (Cd)-Total			100.0		%		80-120	27-AUG-19
Calcium (Ca)-Total			98.8		%		80-120	27-AUG-19
Chromium (Cr)-Total			101.2		%		80-120	27-AUG-19
Cobalt (Co)-Total			102.7		%		80-120	27-AUG-19
Copper (Cu)-Total			101.3		%		80-120	27-AUG-19
Iron (Fe)-Total			97.5		%		80-120	27-AUG-19
Lead (Pb)-Total			94.6		%		80-120	27-AUG-19
Lithium (Li)-Total			100.2		%		80-120	27-AUG-19
Magnesium (Mg)-Total			102.4		%		80-120	27-AUG-19
Manganese (Mn)-Total			102.2		%		80-120	27-AUG-19
Molybdenum (Mo)-Total			103.9		%		80-120	27-AUG-19
Nickel (Ni)-Total			102.7		%		80-120	27-AUG-19
Potassium (K)-Total			106.0		%		80-120	27-AUG-19
Selenium (Se)-Total			100.0		%		80-120	27-AUG-19
Silicon (Si)-Total			111.0		%		80-120	27-AUG-19
Silver (Ag)-Total			95.3		%		80-120	27-AUG-19
Sodium (Na)-Total			105.9		%		80-120	27-AUG-19
Strontium (Sr)-Total			100.4		%		80-120	27-AUG-19
Thallium (Tl)-Total			95.2		%		80-120	27-AUG-19
Tin (Sn)-Total			98.2		%		80-120	27-AUG-19
Titanium (Ti)-Total			107.9		%		80-120	27-AUG-19
Uranium (U)-Total			92.9		%		80-120	27-AUG-19
Vanadium (V)-Total			105.1		%		80-120	27-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 12 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Zinc (Zn)-Total			90.5		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 13 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148916-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.3		%		80-120	31-AUG-19
Antimony (Sb)-Total			108.1		%		80-120	31-AUG-19
Arsenic (As)-Total			99.7		%		80-120	31-AUG-19
Barium (Ba)-Total			99.1		%		80-120	31-AUG-19
Bismuth (Bi)-Total			98.0		%		80-120	31-AUG-19
Boron (B)-Total			99.7		%		80-120	31-AUG-19
Cadmium (Cd)-Total			100.5		%		80-120	31-AUG-19
Calcium (Ca)-Total			101.4		%		80-120	31-AUG-19
Chromium (Cr)-Total			103.8		%		80-120	31-AUG-19
Cobalt (Co)-Total			101.7		%		80-120	31-AUG-19
Copper (Cu)-Total			99.9		%		80-120	31-AUG-19
Iron (Fe)-Total			98.5		%		80-120	31-AUG-19
Lead (Pb)-Total			98.5		%		80-120	31-AUG-19
Lithium (Li)-Total			96.1		%		80-120	31-AUG-19
Magnesium (Mg)-Total			104.1		%		80-120	31-AUG-19
Manganese (Mn)-Total			99.6		%		80-120	31-AUG-19
Molybdenum (Mo)-Total			101.6		%		80-120	31-AUG-19
Nickel (Ni)-Total			99.7		%		80-120	31-AUG-19
Potassium (K)-Total			96.6		%		80-120	31-AUG-19
Selenium (Se)-Total			106.4		%		80-120	31-AUG-19
Silicon (Si)-Total			100.7		%		80-120	31-AUG-19
Silver (Ag)-Total			97.8		%		80-120	31-AUG-19
Sodium (Na)-Total			110.9		%		80-120	31-AUG-19
Strontium (Sr)-Total			99.9		%		80-120	31-AUG-19
Thallium (Tl)-Total			97.9		%		80-120	31-AUG-19
Tin (Sn)-Total			100.5		%		80-120	31-AUG-19
Titanium (Ti)-Total			97.6		%		80-120	31-AUG-19
Uranium (U)-Total			96.6		%		80-120	31-AUG-19
Vanadium (V)-Total			101.8		%		80-120	31-AUG-19
Zinc (Zn)-Total			101.9		%		80-120	31-AUG-19
<b>WG3148916-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 14 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148916-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4776248</b>							
<b>WG3145855-34</b>	<b>LCS</b>							
Ammonia as N			105.8		%		85-115	28-AUG-19
<b>WG3145855-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 15 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Nitrite (as N)			106.5		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Nitrate (as N)			104.2		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4773131							
<b>WG3145474-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	27-AUG-19
<b>WG3145474-6</b>	<b>DUP</b>	<b>L2334696-2</b>						
ORP		316	319	J	mV	3.1	15	27-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4768218							
<b>WG3142667-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.3		%		80-120	24-AUG-19
<b>WG3142667-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4769709							
<b>WG3144676-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	27-AUG-19
Batch	R4771848							
<b>WG3145505-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	27-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4767870							
<b>WG3142434-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19
<b>WG3142434-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19



## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 16 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4767870							
<b>WG3142434-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
<b>WG3142434-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Sulfate (SO4)			104.9		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4777452							
<b>WG3145045-3</b>	<b>DUP</b>	<b>L2334696-2</b>						
Total Dissolved Solids		670	646		mg/L	3.7	20	28-AUG-19
<b>WG3145045-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.5		%		85-115	28-AUG-19
<b>WG3145045-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	28-AUG-19
<b>SRB-BART-SQ-CL</b> <b>Water</b>								
Batch	R4780616							
<b>WG3150122-2</b>	<b>DUP</b>	<b>L2334696-1</b>						
Sulfur Reducing Bacteria		<1.0	<1.0	RPD-NA	CFU/mL	N/A	50	23-AUG-19
<b>WG3150122-1</b>	<b>MB</b>							
Sulfur Reducing Bacteria			<1.0		CFU/mL		1	23-AUG-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4778448							
<b>WG3148809-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-13</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-24</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-27</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 17 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-27</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
<b>WG3148809-31</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4777613</b>							
<b>WG3144790-2</b>	<b>LCS</b>							
Total Suspended Solids			92.0		%		85-115	28-AUG-19
<b>WG3144790-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4768077</b>							
<b>WG3142660-2</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	24-AUG-19
<b>WG3142660-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 18 of 19

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334696

Report Date: 05-SEP-19

Page 19 of 19

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	22-AUG-19 11:55	27-AUG-19 13:30	0.25	122	hours	EHTR-FM
	2	22-AUG-19 12:25	27-AUG-19 13:30	0.25	121	hours	EHTR-FM
	3	22-AUG-19 10:40	27-AUG-19 13:30	0.25	123	hours	EHTR-FM
	4	22-AUG-19 11:10	27-AUG-19 13:30	0.25	122	hours	EHTR-FM
	5	22-AUG-19 12:40	27-AUG-19 13:30	0.25	121	hours	EHTR-FM
	6	22-AUG-19 12:00	27-AUG-19 13:30	0.25	121	hours	EHTR-FM
	7	22-AUG-19 12:00	27-AUG-19 13:30	0.25	121	hours	EHTR-FM
pH							
	1	22-AUG-19 11:55	27-AUG-19 09:00	0.25	117	hours	EHTR-FM
	2	22-AUG-19 12:25	27-AUG-19 12:00	0.25	120	hours	EHTR-FM
	3	22-AUG-19 10:40	27-AUG-19 12:00	0.25	121	hours	EHTR-FM
	4	22-AUG-19 11:10	27-AUG-19 12:00	0.25	121	hours	EHTR-FM
	5	22-AUG-19 12:40	27-AUG-19 12:00	0.25	119	hours	EHTR-FM
	6	22-AUG-19 12:00	27-AUG-19 12:00	0.25	120	hours	EHTR-FM
	7	22-AUG-19 12:00	27-AUG-19 12:00	0.25	120	hours	EHTR-FM
<b>Bacteriological Tests</b>							
Iron Bacteria, Semi-quantitative							
	3	22-AUG-19 10:40	23-AUG-19 11:30	24	25	hours	EHTL
Sulphate Reducing Bacteria, Semi-quantit							
	3	22-AUG-19 10:40	23-AUG-19 11:30	24	25	hours	EHTL

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

**Notes\*:**

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334696 were received on 23-AUG-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-07-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT/INFO				LABORATORY			OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets		Email 1:	Leigh.Stickney	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com		Email 2:	jennifer.kropp@teck.com	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com		X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X
Phone Number	250-865-3048			Phone Number	403 407 1794		Email 6:	DL-Equis-GHO-Field@teck.com	X	X
							PO number	610013		

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2334696-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED									
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	SULFUR/IRON BACTERIA	
GH_POTW10_WG_2019-07-01_NP	GH_POTW10	WG		2019/08/22	11:55	G	9	1	1	1	1	1	1	1	1	1	
GH_POTW15_WG_2019-07-01_NP	GH_POTW15	WG		2019/08/22	12:25	G	9	1	1	1	1	1	1	1	1	1	
GH_POTW17_WG_2019-07-01_NP	GH_POTW17	WG		2019/08/22	10:40	G	9	1	1	1	1	1	1	1	1	1	
GH_POTW06_WG_2019-07-01_NP	GH_POTW06	WG		2019/08/22	11:10	G	9	1	1	1	1	1	1	1	1	1	
GH_POTW09_WG_2019-07-01_NP	GH_POTW09	WG		2019/08/22	12:40	G	9	1	1	1	1	1	1	1	1	1	
GH_GWD2_WG_2019-07-01_NP	GH_GWD	WG		2019/08/22		G	8	1	1	1	1	1	1	1	1	1	
GH_GWB2_WG_2019-07-01_NP	GH_GWB2	WG		2019/08/22		G	8	1	1	1	1	1	1	1	1	1	

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*[Signature]*

8/23 8:45

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Mobile #

Sampler's Signature

Date/Time

*JK*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 27-AUG-19  
Report Date: 05-SEP-19 11:12 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2336441  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-07  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2336441-1 GH_MW-GHC-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 26-AUG-19 @ 14:10							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.70		0.50	mg/L		27-AUG-19	R4771321
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-SEP-19	R4782181
Mercury (Hg)-Total	0.00150		0.00050	ug/L		03-SEP-19	R4782164
Total Organic Carbon	1.76		0.50	mg/L		27-AUG-19	R4771321
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-AUG-19	30-AUG-19	R4781849
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4778083
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-AUG-19	01-SEP-19	R4779652
Dissolved Mercury Filtration Location	FIELD					30-AUG-19	R4778269
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4778083
Aluminum (Al)-Dissolved	0.0034		0.0030	mg/L	30-AUG-19	30-AUG-19	R4781849
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Barium (Ba)-Dissolved	0.0881		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Boron (B)-Dissolved	0.035		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849
Cadmium (Cd)-Dissolved	0.0222		0.0050	ug/L	30-AUG-19	30-AUG-19	R4781849
Calcium (Ca)-Dissolved	170		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	30-AUG-19	30-AUG-19	R4781849
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Iron (Fe)-Dissolved	0.081		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Lithium (Li)-Dissolved	0.0181		0.0010	mg/L	30-AUG-19	30-AUG-19	R4781849
Magnesium (Mg)-Dissolved	60.1		0.10	mg/L	30-AUG-19	30-AUG-19	R4781849
Manganese (Mn)-Dissolved	0.00016		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Molybdenum (Mo)-Dissolved	0.000679		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Nickel (Ni)-Dissolved	0.00086		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Potassium (K)-Dissolved	1.51		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Selenium (Se)-Dissolved	4.51		0.050	ug/L	30-AUG-19	30-AUG-19	R4781849
Silicon (Si)-Dissolved	4.71		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Sodium (Na)-Dissolved	5.36		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Strontium (Sr)-Dissolved	0.496		0.00020	mg/L	30-AUG-19	30-AUG-19	R4781849
Thallium (Tl)-Dissolved	0.000022		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849
Uranium (U)-Dissolved	0.00291		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Zinc (Zn)-Dissolved	0.0074		0.0010	mg/L	30-AUG-19	30-AUG-19	R4781849
<b>Hardness</b>							
Hardness (as CaCO3)	672		0.50	mg/L		03-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.029		0.020	ug/L		31-AUG-19	R4782285
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-SEP-19	R4779571
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2336441-1 GH_MW-GHC-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 26-AUG-19 @ 14:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.120		0.0030	mg/L		31-AUG-19	R4782285
Antimony (Sb)-Total	0.00017		0.00010	mg/L		31-AUG-19	R4782285
Arsenic (As)-Total	0.00058		0.00010	mg/L		31-AUG-19	R4782285
Barium (Ba)-Total	0.0909		0.00010	mg/L		31-AUG-19	R4782285
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-AUG-19	R4782285
Boron (B)-Total	0.036		0.010	mg/L		31-AUG-19	R4782285
Cadmium (Cd)-Total	0.0311		0.0050	ug/L		31-AUG-19	R4782285
Calcium (Ca)-Total	166		0.050	mg/L		31-AUG-19	R4782285
Chromium (Cr)-Total	0.00104		0.00010	mg/L		31-AUG-19	R4782285
Cobalt (Co)-Total	<0.10		0.10	ug/L		31-AUG-19	R4782285
Copper (Cu)-Total	<0.00050		0.00050	mg/L		31-AUG-19	R4782285
Iron (Fe)-Total	1.69		0.010	mg/L		31-AUG-19	R4782285
Lead (Pb)-Total	0.000197		0.000050	mg/L		31-AUG-19	R4782285
Lithium (Li)-Total	0.0169		0.0010	mg/L		31-AUG-19	R4782285
Magnesium (Mg)-Total	55.6		0.10	mg/L		31-AUG-19	R4782285
Manganese (Mn)-Total	0.00286		0.00010	mg/L		31-AUG-19	R4782285
Molybdenum (Mo)-Total	0.000698		0.000050	mg/L		31-AUG-19	R4782285
Nickel (Ni)-Total	0.00103		0.00050	mg/L		31-AUG-19	R4782285
Potassium (K)-Total	1.46		0.050	mg/L		31-AUG-19	R4782285
Selenium (Se)-Total	3.62		0.050	ug/L		31-AUG-19	R4782285
Silicon (Si)-Total	5.15		0.10	mg/L		31-AUG-19	R4782285
Silver (Ag)-Total	0.000052		0.000010	mg/L		31-AUG-19	R4782285
Sodium (Na)-Total	4.96		0.050	mg/L		31-AUG-19	R4782285
Strontium (Sr)-Total	0.509		0.00020	mg/L		31-AUG-19	R4782285
Thallium (Tl)-Total	0.000033		0.000010	mg/L		31-AUG-19	R4782285
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4782285
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-AUG-19	R4782285
Uranium (U)-Total	0.00325		0.000010	mg/L		31-AUG-19	R4782285
Vanadium (V)-Total	0.00106		0.00050	mg/L		31-AUG-19	R4782285
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		31-AUG-19	R4782285
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13.7		1.0	mg/L		28-AUG-19	R4776550
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	280		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Total (as CaCO3)	280		1.0	mg/L		28-AUG-19	R4776509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0053		0.0050	mg/L		29-AUG-19	R4778417
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		27-AUG-19	R4771350
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.94		0.50	mg/L		27-AUG-19	R4771350
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1080		2.0	uS/cm		28-AUG-19	R4776509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.547		0.020	mg/L		27-AUG-19	R4771350
<b>Ion Balance Calculation</b>							
Ion Balance	105		-100	%		03-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.7			%		03-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2336441-1 GH_MW-GHC-1D_WG_2019-07-01_NP Sampled By: CLIENT on 26-AUG-19 @ 14:10 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	13.0			meq/L		03-SEP-19	
Cation Sum	13.7			meq/L		03-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0829		0.0050	mg/L		27-AUG-19	R4771350
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		27-AUG-19	R4771350
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		27-AUG-19	R4770114
<b>Oxidation redution potential by elect.</b>							
ORP	480		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0198		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	349		0.30	mg/L		27-AUG-19	R4771350
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	771	DLHC	20	mg/L		29-AUG-19	R4778550
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.6		1.0	mg/L		29-AUG-19	R4778584
<b>Turbidity</b>							
Turbidity	11.6		0.10	NTU		27-AUG-19	R4772428
<b>pH</b>							
pH	8.06		0.10	pH		28-AUG-19	R4776509
L2336441-2 GH_MW-GHC-1S_WG_2019-07-01_NP Sampled By: CLIENT on 26-AUG-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.07		0.50	mg/L		27-AUG-19	R4771321
Total Kjeldahl Nitrogen	0.228		0.050	mg/L		03-SEP-19	R4782181
Mercury (Hg)-Total	0.00203		0.00050	ug/L		03-SEP-19	R4782164
Total Organic Carbon	2.09		0.50	mg/L		27-AUG-19	R4771321
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	30-AUG-19	30-AUG-19	R4781849
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4778083
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	03-SEP-19	R4782214
Dissolved Mercury Filtration Location	FIELD					30-AUG-19	R4778269
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-AUG-19	R4778083
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	30-AUG-19	30-AUG-19	R4781849
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Arsenic (As)-Dissolved	0.00101		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Barium (Ba)-Dissolved	0.0337		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Boron (B)-Dissolved	0.043		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849
Cadmium (Cd)-Dissolved	0.0261		0.0050	ug/L	30-AUG-19	30-AUG-19	R4781849
Calcium (Ca)-Dissolved	259		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Cobalt (Co)-Dissolved	0.34		0.10	ug/L	30-AUG-19	30-AUG-19	R4781849
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Iron (Fe)-Dissolved	0.659		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2336441-2 GH_MW-GHC-1S_WG_2019-07-01_NP							
Sampled By: CLIENT on 26-AUG-19 @ 12:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Lithium (Li)-Dissolved	0.0234		0.0010	mg/L	30-AUG-19	30-AUG-19	R4781849
Magnesium (Mg)-Dissolved	63.0		0.10	mg/L	30-AUG-19	30-AUG-19	R4781849
Manganese (Mn)-Dissolved	0.154		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Molybdenum (Mo)-Dissolved	0.000977		0.000050	mg/L	30-AUG-19	30-AUG-19	R4781849
Nickel (Ni)-Dissolved	0.00178		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Potassium (K)-Dissolved	2.23		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Selenium (Se)-Dissolved	0.387		0.050	ug/L	30-AUG-19	30-AUG-19	R4781849
Silicon (Si)-Dissolved	6.23		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Sodium (Na)-Dissolved	5.34		0.050	mg/L	30-AUG-19	30-AUG-19	R4781849
Strontium (Sr)-Dissolved	0.689		0.00020	mg/L	30-AUG-19	30-AUG-19	R4781849
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	30-AUG-19	30-AUG-19	R4781849
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	30-AUG-19	30-AUG-19	R4781849
Uranium (U)-Dissolved	0.00165		0.000010	mg/L	30-AUG-19	30-AUG-19	R4781849
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	30-AUG-19	30-AUG-19	R4781849
Zinc (Zn)-Dissolved	0.0040		0.0010	mg/L	30-AUG-19	30-AUG-19	R4781849
<b>Hardness</b>							
Hardness (as CaCO3)	905		0.50	mg/L		03-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-AUG-19	R4782285
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		01-SEP-19	R4779571
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0817		0.0030	mg/L		31-AUG-19	R4782285
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4782285
Arsenic (As)-Total	0.00124		0.00010	mg/L		31-AUG-19	R4782285
Barium (Ba)-Total	0.0347		0.00010	mg/L		31-AUG-19	R4782285
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-AUG-19	R4782285
Boron (B)-Total	0.044		0.010	mg/L		31-AUG-19	R4782285
Cadmium (Cd)-Total	0.0333		0.0050	ug/L		31-AUG-19	R4782285
Calcium (Ca)-Total	251		0.050	mg/L		31-AUG-19	R4782285
Chromium (Cr)-Total	0.00042		0.00010	mg/L		31-AUG-19	R4782285
Cobalt (Co)-Total	0.39		0.10	ug/L		31-AUG-19	R4782285
Copper (Cu)-Total	0.00064		0.00050	mg/L		31-AUG-19	R4782285
Iron (Fe)-Total	1.14		0.010	mg/L		31-AUG-19	R4782285
Lead (Pb)-Total	0.000185		0.000050	mg/L		31-AUG-19	R4782285
Lithium (Li)-Total	0.0221		0.0010	mg/L		31-AUG-19	R4782285
Magnesium (Mg)-Total	58.7		0.10	mg/L		31-AUG-19	R4782285
Manganese (Mn)-Total	0.153		0.00010	mg/L		31-AUG-19	R4782285
Molybdenum (Mo)-Total	0.000927		0.000050	mg/L		31-AUG-19	R4782285
Nickel (Ni)-Total	0.00193		0.00050	mg/L		31-AUG-19	R4782285
Potassium (K)-Total	2.19		0.050	mg/L		31-AUG-19	R4782285
Selenium (Se)-Total	0.328		0.050	ug/L		31-AUG-19	R4782285
Silicon (Si)-Total	6.81		0.10	mg/L		31-AUG-19	R4782285
Silver (Ag)-Total	0.000349		0.000010	mg/L		31-AUG-19	R4782285
Sodium (Na)-Total	4.95		0.050	mg/L		31-AUG-19	R4782285
Strontium (Sr)-Total	0.709		0.00020	mg/L		31-AUG-19	R4782285
Thallium (Tl)-Total	0.000017		0.000010	mg/L		31-AUG-19	R4782285
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4782285

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2336441-2 GH_MW-GHC-1S_WG_2019-07-01_NP							
Sampled By: CLIENT on 26-AUG-19 @ 12:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-AUG-19	R4782285
Uranium (U)-Total	0.00182		0.000010	mg/L		31-AUG-19	R4782285
Vanadium (V)-Total	0.00052		0.00050	mg/L		31-AUG-19	R4782285
Zinc (Zn)-Total	0.0052		0.0030	mg/L		31-AUG-19	R4782285
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	16.6		1.0	mg/L		28-AUG-19	R4776550
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	266		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-AUG-19	R4776509
Alkalinity, Total (as CaCO3)	266		1.0	mg/L		28-AUG-19	R4776509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0214		0.0050	mg/L		29-AUG-19	R4778417
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		27-AUG-19	R4771350
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.5	DLHC	2.5	mg/L		27-AUG-19	R4771350
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1390		2.0	uS/cm		28-AUG-19	R4776509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		27-AUG-19	R4771350
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		03-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.3			%		03-SEP-19	
Anion Sum	18.0			meq/L		03-SEP-19	
Cation Sum	18.4			meq/L		03-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		27-AUG-19	R4771350
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		27-AUG-19	R4771350
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		27-AUG-19	R4770114
<b>Oxidation redution potential by elect.</b>							
ORP	449		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0054		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	595	DLHC	1.5	mg/L		27-AUG-19	R4771350
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1070	DLHC	20	mg/L		29-AUG-19	R4778550
<b>Total Suspended Solids</b>							
Total Suspended Solids	9.8		1.0	mg/L		29-AUG-19	R4778584
<b>Turbidity</b>							
Turbidity	9.38		0.10	NTU		27-AUG-19	R4772428
<b>pH</b>							
pH	8.00		0.10	pH		28-AUG-19	R4776509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-07

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4776550							
<b>WG3146870-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.0		%		85-115	28-AUG-19
<b>WG3146870-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	28-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	28-AUG-19
<b>WG3146976-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4781849							
<b>WG3148413-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	30-AUG-19
<b>WG3148413-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4782285							
<b>WG3148080-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.2		%		80-120	31-AUG-19
<b>WG3148080-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2</b>	<b>LCS</b>							
Bromide (Br)			108.1		%		85-115	27-AUG-19
<b>WG3145701-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4771321							
<b>WG3145712-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.9		%		80-120	27-AUG-19
<b>WG3145712-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4771321							
<b>WG3145712-2 LCS</b>								
Total Organic Carbon			99.7		%		80-120	27-AUG-19
<b>WG3145712-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	27-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2 LCS</b>								
Chloride (Cl)			99.7		%		90-110	27-AUG-19
<b>WG3145701-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	27-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-2 LCS</b>								
Conductivity (@ 25C)			98.7		%		90-110	28-AUG-19
<b>WG3146976-1 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2 LCS</b>								
Fluoride (F)			103.1		%		90-110	27-AUG-19
<b>WG3145701-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	27-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4778862							
<b>WG3148584-2 LCS</b>								
Mercury (Hg)-Dissolved			98.5		%		80-120	31-AUG-19
<b>WG3148584-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4779571							
<b>WG3149837-16 DUP</b>		<b>L2336441-2</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	01-SEP-19
<b>WG3149837-2 LCS</b>								
Mercury (Hg)-Total			100.7		%		80-120	01-SEP-19
<b>WG3149837-1 MB</b>								
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	01-SEP-19
<b>WG3149837-15 MS</b>		<b>L2336441-1</b>						



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>								
Matrix: <b>Water</b>								
Batch: <b>R4779571</b>								
WG3149837-15 MS								
Reference: <b>L2336441-1</b>								
Mercury (Hg)-Total								
			91.4		%		70-130	01-SEP-19
<b>HG-T-U-CVAF-VA</b>								
Matrix: <b>Water</b>								
Batch: <b>R4782164</b>								
WG3150757-2 LCS								
Mercury (Hg)-Total								
			96.8		%		80-120	03-SEP-19
WG3150757-1 MB								
Mercury (Hg)-Total								
			<0.00050		ug/L		0.0005	03-SEP-19
<b>MET-D-CCMS-VA</b>								
Matrix: <b>Water</b>								
Batch: <b>R4781849</b>								
WG3148413-2 LCS								
Aluminum (Al)-Dissolved								
			101.9		%		80-120	30-AUG-19
Antimony (Sb)-Dissolved								
			96.4		%		80-120	30-AUG-19
Arsenic (As)-Dissolved								
			106.1		%		80-120	30-AUG-19
Barium (Ba)-Dissolved								
			107.3		%		80-120	30-AUG-19
Bismuth (Bi)-Dissolved								
			109.5		%		80-120	30-AUG-19
Boron (B)-Dissolved								
			97.4		%		80-120	30-AUG-19
Cadmium (Cd)-Dissolved								
			106.6		%		80-120	30-AUG-19
Calcium (Ca)-Dissolved								
			100.8		%		80-120	30-AUG-19
Chromium (Cr)-Dissolved								
			105.1		%		80-120	30-AUG-19
Cobalt (Co)-Dissolved								
			102.9		%		80-120	30-AUG-19
Copper (Cu)-Dissolved								
			103.2		%		80-120	30-AUG-19
Iron (Fe)-Dissolved								
			102.9		%		80-120	30-AUG-19
Lead (Pb)-Dissolved								
			102.1		%		80-120	30-AUG-19
Lithium (Li)-Dissolved								
			98.5		%		80-120	30-AUG-19
Magnesium (Mg)-Dissolved								
			108.2		%		80-120	30-AUG-19
Manganese (Mn)-Dissolved								
			102.5		%		80-120	30-AUG-19
Molybdenum (Mo)-Dissolved								
			101.1		%		80-120	30-AUG-19
Nickel (Ni)-Dissolved								
			102.2		%		80-120	30-AUG-19
Potassium (K)-Dissolved								
			105.9		%		80-120	30-AUG-19
Selenium (Se)-Dissolved								
			115.9		%		80-120	30-AUG-19
Silicon (Si)-Dissolved								
			99.4		%		60-140	30-AUG-19
Silver (Ag)-Dissolved								
			99.4		%		80-120	30-AUG-19
Sodium (Na)-Dissolved								
			105.1		%		80-120	30-AUG-19
Strontium (Sr)-Dissolved								
			99.96		%		80-120	30-AUG-19





## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4781849</b>							
<b>WG3148413-2</b>	<b>LCS</b>							
Thallium (Tl)-Dissolved			103.3		%		80-120	30-AUG-19
Tin (Sn)-Dissolved			100.4		%		80-120	30-AUG-19
Titanium (Ti)-Dissolved			103.9		%		80-120	30-AUG-19
Uranium (U)-Dissolved			103.9		%		80-120	30-AUG-19
Vanadium (V)-Dissolved			104.1		%		80-120	30-AUG-19
Zinc (Zn)-Dissolved			99.2		%		80-120	30-AUG-19
<b>WG3148413-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-AUG-19



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4781849</b>							
<b>WG3148413-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782285</b>							
<b>WG3148080-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.0		%		80-120	31-AUG-19
Antimony (Sb)-Total			102.9		%		80-120	31-AUG-19
Arsenic (As)-Total			95.5		%		80-120	31-AUG-19
Barium (Ba)-Total			100.1		%		80-120	31-AUG-19
Bismuth (Bi)-Total			99.6		%		80-120	31-AUG-19
Boron (B)-Total			95.4		%		80-120	31-AUG-19
Cadmium (Cd)-Total			100.1		%		80-120	31-AUG-19
Calcium (Ca)-Total			99.9		%		80-120	31-AUG-19
Chromium (Cr)-Total			99.9		%		80-120	31-AUG-19
Cobalt (Co)-Total			96.7		%		80-120	31-AUG-19
Copper (Cu)-Total			96.4		%		80-120	31-AUG-19
Iron (Fe)-Total			103.5		%		80-120	31-AUG-19
Lead (Pb)-Total			102.9		%		80-120	31-AUG-19
Lithium (Li)-Total			98.9		%		80-120	31-AUG-19
Magnesium (Mg)-Total			98.9		%		80-120	31-AUG-19
Manganese (Mn)-Total			95.7		%		80-120	31-AUG-19
Molybdenum (Mo)-Total			98.2		%		80-120	31-AUG-19
Nickel (Ni)-Total			99.0		%		80-120	31-AUG-19
Potassium (K)-Total			96.9		%		80-120	31-AUG-19
Selenium (Se)-Total			101.5		%		80-120	31-AUG-19
Silicon (Si)-Total			106.7		%		80-120	31-AUG-19
Silver (Ag)-Total			101.0		%		80-120	31-AUG-19
Sodium (Na)-Total			102.6		%		80-120	31-AUG-19
Strontium (Sr)-Total			103.0		%		80-120	31-AUG-19
Thallium (Tl)-Total			98.9		%		80-120	31-AUG-19
Tin (Sn)-Total			99.1		%		80-120	31-AUG-19
Titanium (Ti)-Total			95.8		%		80-120	31-AUG-19
Uranium (U)-Total			107.1		%		80-120	31-AUG-19



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4782285</b>							
<b>WG3148080-2</b>	<b>LCS</b>							
Vanadium (V)-Total			100.4		%		80-120	31-AUG-19
Zinc (Zn)-Total			99.4		%		80-120	31-AUG-19
<b>WG3148080-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4778417							
<b>WG3147579-2</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	29-AUG-19
<b>WG3147579-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-AUG-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2</b>	<b>LCS</b>							
Nitrite (as N)			102.1		%		90-110	27-AUG-19
<b>WG3145701-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-AUG-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2</b>	<b>LCS</b>							
Nitrate (as N)			99.96		%		90-110	27-AUG-19
<b>WG3145701-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4775407							
<b>WG3146400-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	28-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4783025							
<b>WG3151930-88</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.3		%		80-120	04-SEP-19
<b>WG3151930-87</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-2</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4770114							
<b>WG3144974-7</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.6		%		80-120	27-AUG-19
<b>WG3144974-2</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4770114							
<b>WG3144974-2 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4771350							
<b>WG3145701-2 LCS</b>								
Sulfate (SO4)			101.0		%		90-110	27-AUG-19
<b>WG3145701-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	27-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4778550							
<b>WG3147680-8 LCS</b>								
Total Dissolved Solids			93.1		%		85-115	29-AUG-19
<b>WG3147680-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4782181							
<b>WG3150638-10 LCS</b>								
Total Kjeldahl Nitrogen			98.4		%		75-125	03-SEP-19
<b>WG3150638-14 LCS</b>								
Total Kjeldahl Nitrogen			98.4		%		75-125	03-SEP-19
<b>WG3150638-18 LCS</b>								
Total Kjeldahl Nitrogen			98.8		%		75-125	03-SEP-19
<b>WG3150638-22 LCS</b>								
Total Kjeldahl Nitrogen			107.8		%		75-125	03-SEP-19
<b>WG3150638-25 LCS</b>								
Total Kjeldahl Nitrogen			97.6		%		75-125	03-SEP-19
<b>WG3150638-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-24 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4778584</b>							
<b>WG3147082-4</b>	<b>LCS</b>							
Total Suspended Solids			95.0		%		85-115	29-AUG-19
<b>WG3147082-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4772428</b>							
<b>WG3145486-3</b>	<b>DUP</b>	<b>L2336441-1</b>						
Turbidity		11.6	11.7		NTU	0.9	15	27-AUG-19
<b>WG3145486-2</b>	<b>LCS</b>							
Turbidity			98.5		%		85-115	27-AUG-19
<b>WG3145486-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	27-AUG-19

# Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2336441

Report Date: 05-SEP-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-AUG-19 14:10	28-AUG-19 15:10	0.25	49	hours	EHTR-FM
	2	26-AUG-19 12:50	28-AUG-19 15:10	0.25	50	hours	EHTR-FM
pH	1	26-AUG-19 14:10	28-AUG-19 11:00	0.25	45	hours	EHTR-FM
	2	26-AUG-19 12:50	28-AUG-19 11:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2336441 were received on 27-AUG-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **GHO\_QTR\_GW\_2019-07-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	dl-EQUIS-GHO-Field@teck.com	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	teckcoal@equisonline.com			X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:				
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:				
Postal Code	VOB1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number				
Phone Number	250-865-3048			Phone Number	403 407 1794							

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2336441-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	PRESERVE	ANALYSIS REQUESTED												
									ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Y	N	Y	N	
GH_MW-GHC-1D_WG_2019-07-01_NP	GH_MW-GHC-1D	WG	N	8/26/2019	14:10	G	8	H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3	NONE						
GH_MW-GHC-1S_WG_2019-07-01_NP	GH_MW-GHC-1S	WG	N	8/26/2019	12:50	G	8														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	8/27 8:50

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

10



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 29-AUG-19  
Report Date: 03-SEP-19 17:19 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2338460  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers: GHO\_QTR\_GW\_2019-07  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338460-1 GH_MW-TD_WG_2019-07-01_NP							
Sampled By: CLIENT on 28-AUG-19 @ 13:08							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		30-AUG-19	R4779480
Total Kjeldahl Nitrogen	0.089		0.050	mg/L		31-AUG-19	R4779015
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		03-SEP-19	R4781068
Total Organic Carbon	<0.50		0.50	mg/L		30-AUG-19	R4779480
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-AUG-19	31-AUG-19	R4778896
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778823
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-AUG-19	31-AUG-19	R4778864
Dissolved Mercury Filtration Location	FIELD					31-AUG-19	R4778819
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778823
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-AUG-19	31-AUG-19	R4778896
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Barium (Ba)-Dissolved	0.0220		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	31-AUG-19	R4778896
Boron (B)-Dissolved	0.382		0.010	mg/L	31-AUG-19	31-AUG-19	R4778896
Cadmium (Cd)-Dissolved	0.227		0.0050	ug/L	31-AUG-19	31-AUG-19	R4778896
Calcium (Ca)-Dissolved	85.0		0.050	mg/L	31-AUG-19	31-AUG-19	R4778896
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Cobalt (Co)-Dissolved	0.44		0.10	ug/L	31-AUG-19	31-AUG-19	R4778896
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	31-AUG-19	R4778896
Iron (Fe)-Dissolved	0.980		0.010	mg/L	31-AUG-19	31-AUG-19	R4778896
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	31-AUG-19	R4778896
Lithium (Li)-Dissolved	0.0415		0.0010	mg/L	31-AUG-19	31-AUG-19	R4778896
Magnesium (Mg)-Dissolved	37.3		0.10	mg/L	31-AUG-19	31-AUG-19	R4778896
Manganese (Mn)-Dissolved	0.773		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Molybdenum (Mo)-Dissolved	0.00285		0.000050	mg/L	31-AUG-19	31-AUG-19	R4778896
Nickel (Ni)-Dissolved	0.00090		0.00050	mg/L	31-AUG-19	31-AUG-19	R4778896
Potassium (K)-Dissolved	2.28		0.050	mg/L	31-AUG-19	31-AUG-19	R4778896
Selenium (Se)-Dissolved	0.053		0.050	ug/L	31-AUG-19	31-AUG-19	R4778896
Silicon (Si)-Dissolved	6.82		0.050	mg/L	31-AUG-19	31-AUG-19	R4778896
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-AUG-19	31-AUG-19	R4778896
Sodium (Na)-Dissolved	29.8		0.050	mg/L	31-AUG-19	31-AUG-19	R4778896
Strontium (Sr)-Dissolved	1.10		0.00020	mg/L	31-AUG-19	31-AUG-19	R4778896
Thallium (Tl)-Dissolved	0.000159		0.000010	mg/L	31-AUG-19	31-AUG-19	R4778896
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	31-AUG-19	R4778896
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-AUG-19	31-AUG-19	R4778896
Uranium (U)-Dissolved	0.000959		0.000010	mg/L	31-AUG-19	31-AUG-19	R4778896
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	31-AUG-19	R4778896
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-AUG-19	31-AUG-19	R4778896
<b>Hardness</b>							
Hardness (as CaCO3)	366		0.50	mg/L		31-AUG-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		31-AUG-19	R4778896
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		31-AUG-19	R4778864
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338460-1 GH_MW-TD_WG_2019-07-01_NP							
Sampled By: CLIENT on 28-AUG-19 @ 13:08							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		31-AUG-19	R4778896
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4778896
Arsenic (As)-Total	0.00014		0.00010	mg/L		31-AUG-19	R4778896
Barium (Ba)-Total	0.0220		0.00010	mg/L		31-AUG-19	R4778896
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		31-AUG-19	R4778896
Boron (B)-Total	0.406		0.010	mg/L		31-AUG-19	R4778896
Cadmium (Cd)-Total	0.535		0.0050	ug/L		31-AUG-19	R4778896
Calcium (Ca)-Total	89.4		0.050	mg/L		31-AUG-19	R4778896
Chromium (Cr)-Total	0.00024		0.00010	mg/L		31-AUG-19	R4778896
Cobalt (Co)-Total	0.48		0.10	ug/L		31-AUG-19	R4778896
Copper (Cu)-Total	<0.00050		0.00050	mg/L		31-AUG-19	R4778896
Iron (Fe)-Total	1.08		0.010	mg/L		31-AUG-19	R4778896
Lead (Pb)-Total	<0.000050		0.000050	mg/L		31-AUG-19	R4778896
Lithium (Li)-Total	0.0410		0.0010	mg/L		31-AUG-19	R4778896
Magnesium (Mg)-Total	37.0		0.10	mg/L		31-AUG-19	R4778896
Manganese (Mn)-Total	0.804		0.00010	mg/L		31-AUG-19	R4778896
Molybdenum (Mo)-Total	0.00290		0.000050	mg/L		31-AUG-19	R4778896
Nickel (Ni)-Total	0.00099		0.00050	mg/L		31-AUG-19	R4778896
Potassium (K)-Total	2.25		0.050	mg/L		31-AUG-19	R4778896
Selenium (Se)-Total	<0.050		0.050	ug/L		31-AUG-19	R4778896
Silicon (Si)-Total	6.99		0.10	mg/L		31-AUG-19	R4778896
Silver (Ag)-Total	<0.000010		0.000010	mg/L		31-AUG-19	R4778896
Sodium (Na)-Total	29.8		0.050	mg/L		31-AUG-19	R4778896
Strontium (Sr)-Total	1.13		0.00020	mg/L		31-AUG-19	R4778896
Thallium (Tl)-Total	0.000179		0.000010	mg/L		31-AUG-19	R4778896
Tin (Sn)-Total	<0.00010		0.00010	mg/L		31-AUG-19	R4778896
Titanium (Ti)-Total	<0.010		0.010	mg/L		31-AUG-19	R4778896
Uranium (U)-Total	0.000995		0.000010	mg/L		31-AUG-19	R4778896
Vanadium (V)-Total	<0.00050		0.00050	mg/L		31-AUG-19	R4778896
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		31-AUG-19	R4778896
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.5		1.0	mg/L		30-AUG-19	R4779479
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	346		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Total (as CaCO3)	346		1.0	mg/L		30-AUG-19	R4779469
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0906		0.0050	mg/L		30-AUG-19	R4782035
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	736		2.0	uS/cm		30-AUG-19	R4779469
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.276		0.020	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		01-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.2			%		01-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338460-1 GH_MW-TD_WG_2019-07-01_NP							
Sampled By: CLIENT on 28-AUG-19 @ 13:08							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	8.70			meq/L		01-SEP-19	
Cation Sum	8.74			meq/L		01-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-AUG-19	R4778146
<b>Oxidation redution potential by elect.</b>							
ORP	242		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		03-SEP-19	R4782095
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	85.5		0.30	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	433	DLHC	20	mg/L		01-SEP-19	R4781728
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-SEP-19	R4781854
<b>Turbidity</b>							
Turbidity	12.8		0.10	NTU		29-AUG-19	R4777726
<b>pH</b>							
pH	8.11		0.10	pH		30-AUG-19	R4779469

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-07

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.





## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 1 of 12

Client: TECK COAL LIMITED (GREENHILLS)  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4779479							
<b>WG3149669-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.2		%		85-115	30-AUG-19
<b>WG3149669-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	30-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4779469							
<b>WG3149661-9</b>	<b>DUP</b>	<b>L2338460-1</b>						
Alkalinity, Total (as CaCO3)		346	340		mg/L	1.7	20	30-AUG-19
<b>WG3149661-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	30-AUG-19
<b>WG3149661-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4778896							
<b>WG3149226-3</b>	<b>DUP</b>	<b>L2338460-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	31-AUG-19
<b>WG3149226-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.7		%		80-120	31-AUG-19
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4778896							
<b>WG3149220-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			102.2		%		80-120	31-AUG-19
<b>WG3149220-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4778982							
<b>WG3149458-2</b>	<b>LCS</b>							
Bromide (Br)			100.3		%		85-115	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4779480							
<b>WG3149829-3</b>	<b>DUP</b>	<b>L2338460-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3149829-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4779480							
<b>WG3149829-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.9		%		80-120	30-AUG-19
<b>WG3149829-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4779480							
<b>WG3149829-3</b>	<b>DUP</b>	<b>L2338460-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3149829-2</b>	<b>LCS</b>							
Total Organic Carbon			113.1		%		80-120	30-AUG-19
<b>WG3149829-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4778982							
<b>WG3149458-2</b>	<b>LCS</b>							
Chloride (Cl)			99.5		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	30-AUG-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4779469							
<b>WG3149661-9</b>	<b>DUP</b>	<b>L2338460-1</b>						
Conductivity (@ 25C)		736	735		uS/cm	0.1	10	30-AUG-19
<b>WG3149661-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.0		%		90-110	30-AUG-19
<b>WG3149661-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4778982							
<b>WG3149458-2</b>	<b>LCS</b>							
Fluoride (F)			101.6		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-AUG-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4778864							
<b>WG3149222-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.8		%		80-120	31-AUG-19
<b>WG3149222-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
Batch R4778864								
WG3149222-1 MB								
	Mercury (Hg)-Dissolved		<0.000005C		mg/L		0.000005	31-AUG-19
<b>HG-T-CVAA-VA</b>								
Batch R4778864								
WG3149279-9 DUP		L2338460-1						
	Mercury (Hg)-Total	<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	31-AUG-19
WG3149279-2 LCS								
	Mercury (Hg)-Total		97.5		%		80-120	31-AUG-19
WG3149279-1 MB								
	Mercury (Hg)-Total		<0.000005C		mg/L		0.000005	31-AUG-19
<b>HG-T-U-CVAF-VA</b>								
Batch R4781068								
WG3149644-6 DUP		L2338460-1						
	Mercury (Hg)-Total	<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	03-SEP-19
WG3149644-2 LCS								
	Mercury (Hg)-Total		101.0		%		80-120	03-SEP-19
WG3149644-1 MB								
	Mercury (Hg)-Total		<0.00050		ug/L		0.0005	03-SEP-19
<b>MET-D-CCMS-VA</b>								
Batch R4778896								
WG3149226-3 DUP		L2338460-1						
	Aluminum (Al)-Dissolved	<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	31-AUG-19
	Antimony (Sb)-Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-19
	Arsenic (As)-Dissolved	0.00014	0.00014		mg/L	2.1	20	31-AUG-19
	Barium (Ba)-Dissolved	0.0220	0.0221		mg/L	0.4	20	31-AUG-19
	Bismuth (Bi)-Dissolved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-AUG-19
	Boron (B)-Dissolved	0.382	0.386		mg/L	0.9	20	31-AUG-19
	Cadmium (Cd)-Dissolved	0.000227	0.000230		mg/L	1.6	20	31-AUG-19
	Calcium (Ca)-Dissolved	85.0	84.4		mg/L	0.6	20	31-AUG-19
	Chromium (Cr)-Dissolved	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-19
	Cobalt (Co)-Dissolved	0.00044	0.00044		mg/L	0.4	20	31-AUG-19
	Copper (Cu)-Dissolved	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-AUG-19
	Iron (Fe)-Dissolved	0.980	0.962		mg/L	1.8	20	31-AUG-19
	Lead (Pb)-Dissolved	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-AUG-19
	Lithium (Li)-Dissolved	0.0415	0.0398		mg/L	4.2	20	31-AUG-19



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-3</b>	<b>DUP</b>	<b>L2338460-1</b>						
Magnesium (Mg)-Dissolved		37.3	36.7		mg/L	1.5	20	31-AUG-19
Manganese (Mn)-Dissolved		0.773	0.750		mg/L	2.9	20	31-AUG-19
Molybdenum (Mo)-Dissolved		0.00285	0.00293		mg/L	2.7	20	31-AUG-19
Nickel (Ni)-Dissolved		0.00090	0.00093		mg/L	2.8	20	31-AUG-19
Potassium (K)-Dissolved		2.28	2.28		mg/L	0.3	20	31-AUG-19
Selenium (Se)-Dissolved		0.000053	<0.000050	RPD-NA	mg/L	N/A	20	31-AUG-19
Silicon (Si)-Dissolved		6.82	6.87		mg/L	0.7	20	31-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-AUG-19
Sodium (Na)-Dissolved		29.8	29.3		mg/L	1.6	20	31-AUG-19
Strontium (Sr)-Dissolved		1.10	1.10		mg/L	0.1	20	31-AUG-19
Thallium (Tl)-Dissolved		0.000159	0.000171		mg/L	7.1	20	31-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-AUG-19
Uranium (U)-Dissolved		0.000959	0.000999		mg/L	4.0	20	31-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-AUG-19
Zinc (Zn)-Dissolved		<0.0010	0.0010	RPD-NA	mg/L	N/A	20	31-AUG-19
<b>WG3149226-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	31-AUG-19
Antimony (Sb)-Dissolved			102.2		%		80-120	31-AUG-19
Arsenic (As)-Dissolved			102.5		%		80-120	31-AUG-19
Barium (Ba)-Dissolved			100.8		%		80-120	31-AUG-19
Bismuth (Bi)-Dissolved			97.4		%		80-120	31-AUG-19
Boron (B)-Dissolved			110.5		%		80-120	31-AUG-19
Cadmium (Cd)-Dissolved			102.7		%		80-120	31-AUG-19
Calcium (Ca)-Dissolved			104.4		%		80-120	31-AUG-19
Chromium (Cr)-Dissolved			106.3		%		80-120	31-AUG-19
Cobalt (Co)-Dissolved			102.7		%		80-120	31-AUG-19
Copper (Cu)-Dissolved			102.4		%		80-120	31-AUG-19
Iron (Fe)-Dissolved			101.3		%		80-120	31-AUG-19
Lead (Pb)-Dissolved			99.6		%		80-120	31-AUG-19
Lithium (Li)-Dissolved			100.1		%		80-120	31-AUG-19
Magnesium (Mg)-Dissolved			111.5		%		80-120	31-AUG-19
Manganese (Mn)-Dissolved			103.7		%		80-120	31-AUG-19
Molybdenum (Mo)-Dissolved			102.8		%		80-120	31-AUG-19



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			101.8		%		80-120	31-AUG-19
Potassium (K)-Dissolved			99.3		%		80-120	31-AUG-19
Selenium (Se)-Dissolved			105.8		%		80-120	31-AUG-19
Silicon (Si)-Dissolved			108.1		%		60-140	31-AUG-19
Silver (Ag)-Dissolved			99.3		%		80-120	31-AUG-19
Sodium (Na)-Dissolved			112.4		%		80-120	31-AUG-19
Strontium (Sr)-Dissolved			102.3		%		80-120	31-AUG-19
Thallium (Tl)-Dissolved			99.1		%		80-120	31-AUG-19
Tin (Sn)-Dissolved			102.1		%		80-120	31-AUG-19
Titanium (Ti)-Dissolved			99.2		%		80-120	31-AUG-19
Uranium (U)-Dissolved			94.8		%		80-120	31-AUG-19
Vanadium (V)-Dissolved			104.2		%		80-120	31-AUG-19
Zinc (Zn)-Dissolved			103.8		%		80-120	31-AUG-19
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149220-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			103.3		%		80-120	31-AUG-19
Antimony (Sb)-Total			101.7		%		80-120	31-AUG-19
Arsenic (As)-Total			101.2		%		80-120	31-AUG-19
Barium (Ba)-Total			97.9		%		80-120	31-AUG-19
Bismuth (Bi)-Total			101.4		%		80-120	31-AUG-19
Boron (B)-Total			103.7		%		80-120	31-AUG-19
Cadmium (Cd)-Total			101.0		%		80-120	31-AUG-19
Calcium (Ca)-Total			102.9		%		80-120	31-AUG-19
Chromium (Cr)-Total			107.1		%		80-120	31-AUG-19
Cobalt (Co)-Total			102.5		%		80-120	31-AUG-19
Copper (Cu)-Total			102.5		%		80-120	31-AUG-19
Iron (Fe)-Total			101.3		%		80-120	31-AUG-19
Lead (Pb)-Total			99.6		%		80-120	31-AUG-19
Lithium (Li)-Total			101.1		%		80-120	31-AUG-19
Magnesium (Mg)-Total			112.1		%		80-120	31-AUG-19
Manganese (Mn)-Total			102.3		%		80-120	31-AUG-19
Molybdenum (Mo)-Total			102.0		%		80-120	31-AUG-19
Nickel (Ni)-Total			100.9		%		80-120	31-AUG-19
Potassium (K)-Total			99.3		%		80-120	31-AUG-19
Selenium (Se)-Total			106.0		%		80-120	31-AUG-19
Silicon (Si)-Total			108.1		%		80-120	31-AUG-19



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149220-2 LCS</b>								
Silver (Ag)-Total			97.7		%		80-120	31-AUG-19
Sodium (Na)-Total			112.0		%		80-120	31-AUG-19
Strontium (Sr)-Total			99.7		%		80-120	31-AUG-19
Thallium (Tl)-Total			99.2		%		80-120	31-AUG-19
Tin (Sn)-Total			100.8		%		80-120	31-AUG-19
Titanium (Ti)-Total			98.9		%		80-120	31-AUG-19
Uranium (U)-Total			96.3		%		80-120	31-AUG-19
Vanadium (V)-Total			103.6		%		80-120	31-AUG-19
Zinc (Zn)-Total			106.4		%		80-120	31-AUG-19
<b>WG3149220-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-AUG-19



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149220-1</b>	<b>MB</b>							
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-AUG-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4782035</b>							
<b>WG3148808-18</b>	<b>LCS</b>							
Ammonia as N			106.2		%		85-115	30-AUG-19
<b>WG3148808-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-AUG-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-2</b>	<b>LCS</b>							
Nitrite (as N)			102.2		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-AUG-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-2</b>	<b>LCS</b>							
Nitrate (as N)			99.9		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778885</b>							
<b>WG3149149-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	30-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4782095</b>							
<b>WG3150644-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			108.0		%		80-120	03-SEP-19
<b>WG3150644-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-SEP-19
<b>PH-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4779469</b>							
<b>WG3149661-9</b>	<b>DUP</b>	<b>L2338460-1</b>						
pH		8.11	8.13	J	pH	0.02	0.2	30-AUG-19
<b>WG3149661-8</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	30-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778146</b>							
<b>WG3147483-31</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.0		%		80-120	29-AUG-19
<b>WG3147483-8</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-AUG-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4781728</b>							
<b>WG3149851-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.1		%		85-115	01-SEP-19
<b>WG3149851-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-SEP-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4779015</b>							
<b>WG3149449-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.4		%		75-125	31-AUG-19
<b>WG3149449-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	31-AUG-19
<b>WG3149449-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.3		%		75-125	31-AUG-19
<b>WG3149449-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.8		%		75-125	31-AUG-19
<b>WG3149449-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4779015</b>							
<b>WG3149449-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4781854</b>							
<b>WG3149790-2</b>	<b>LCS</b>							
Total Suspended Solids			86.6		%		85-115	01-SEP-19
<b>WG3149790-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-SEP-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4777726</b>							
<b>WG3147836-8</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	29-AUG-19
<b>WG3147836-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-AUG-19

# Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2338460

Report Date: 03-SEP-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	28-AUG-19 13:08	30-AUG-19 09:30	0.25	44	hours	EHTR-FM
pH	1	28-AUG-19 13:08	30-AUG-19 12:00	0.25	47	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2338460 were received on 29-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-07-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N
GH_MW-TD_WG_2019-07-01_NP	GH_MW-TD	WG		2019/08/28	13:08	G	8	H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3	NONE
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA
								1	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>D/k</i>	<i>8/29 8900</i>
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name		Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				



L2338460-COFC

*90C*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 17-SEP-19  
Report Date: 25-SEP-19 17:08 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2348893  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2348893-1 GH_MW-PC_WG_2019-07-01_NP							
Sampled By: CLIENT on 16-SEP-19 @ 14:10							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.13		0.50	mg/L		23-SEP-19	R4835335
Total Kjeldahl Nitrogen	0.871		0.050	mg/L		24-SEP-19	R4840829
Mercury (Hg)-Total	0.000028		0.000010	mg/L		25-SEP-19	R4825933
Mercury (Hg)-Total	0.036		0.020	ug/L		21-SEP-19	R4830549
Total Organic Carbon	<2.5		2.5	mg/L		23-SEP-19	R4835335
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-SEP-19	20-SEP-19	R4828391
Dissolved Metals Filtration Location	FIELD					20-SEP-19	R4826991
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-SEP-19	20-SEP-19	R4825933
Dissolved Mercury Filtration Location	FIELD					20-SEP-19	R4826497
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					20-SEP-19	R4826991
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-SEP-19	20-SEP-19	R4828391
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Arsenic (As)-Dissolved	0.00019		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Barium (Ba)-Dissolved	0.120		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-SEP-19	20-SEP-19	R4828391
Boron (B)-Dissolved	<0.010		0.010	mg/L	20-SEP-19	20-SEP-19	R4828391
Cadmium (Cd)-Dissolved	0.0450		0.0050	ug/L	20-SEP-19	20-SEP-19	R4828391
Calcium (Ca)-Dissolved	128		0.050	mg/L	20-SEP-19	20-SEP-19	R4828391
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	20-SEP-19	20-SEP-19	R4828391
Copper (Cu)-Dissolved	0.0123		0.00050	mg/L	20-SEP-19	20-SEP-19	R4828391
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	20-SEP-19	20-SEP-19	R4828391
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	20-SEP-19	20-SEP-19	R4828391
Lithium (Li)-Dissolved	0.0092		0.0010	mg/L	20-SEP-19	20-SEP-19	R4828391
Magnesium (Mg)-Dissolved	84.3		0.10	mg/L	20-SEP-19	20-SEP-19	R4828391
Manganese (Mn)-Dissolved	0.00058		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Molybdenum (Mo)-Dissolved	0.00251		0.000050	mg/L	20-SEP-19	20-SEP-19	R4828391
Nickel (Ni)-Dissolved	0.00066		0.00050	mg/L	20-SEP-19	20-SEP-19	R4828391
Potassium (K)-Dissolved	1.16		0.050	mg/L	20-SEP-19	20-SEP-19	R4828391
Selenium (Se)-Dissolved	76.4		0.050	ug/L	20-SEP-19	20-SEP-19	R4828391
Silicon (Si)-Dissolved	2.91		0.050	mg/L	20-SEP-19	20-SEP-19	R4828391
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-SEP-19	20-SEP-19	R4828391
Sodium (Na)-Dissolved	1.07		0.050	mg/L	20-SEP-19	20-SEP-19	R4828391
Strontium (Sr)-Dissolved	0.154		0.00020	mg/L	20-SEP-19	20-SEP-19	R4828391
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-SEP-19	20-SEP-19	R4828391
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	20-SEP-19	20-SEP-19	R4828391
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-SEP-19	20-SEP-19	R4828391
Uranium (U)-Dissolved	0.00485		0.000010	mg/L	20-SEP-19	20-SEP-19	R4828391
Vanadium (V)-Dissolved	<0.000050		0.00050	mg/L	20-SEP-19	20-SEP-19	R4828391
Zinc (Zn)-Dissolved	0.0028		0.0010	mg/L	20-SEP-19	20-SEP-19	R4828391
<b>Hardness</b>							
Hardness (as CaCO3)	666		0.50	mg/L		23-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.734		0.020	ug/L		20-SEP-19	R4829389
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	7.66		0.0030	mg/L		20-SEP-19	R4829389

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2348893-1 GH_MW-PC_WG_2019-07-01_NP							
Sampled By: CLIENT on 16-SEP-19 @ 14:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Antimony (Sb)-Total	0.00025		0.00010	mg/L		20-SEP-19	R4829389
Arsenic (As)-Total	0.00413		0.00010	mg/L		20-SEP-19	R4829389
Barium (Ba)-Total	0.901		0.00010	mg/L		20-SEP-19	R4829389
Bismuth (Bi)-Total	0.000185		0.000050	mg/L		20-SEP-19	R4829389
Boron (B)-Total	0.012		0.010	mg/L		20-SEP-19	R4829389
Cadmium (Cd)-Total	0.356		0.0050	ug/L		20-SEP-19	R4829389
Calcium (Ca)-Total	142		0.050	mg/L		20-SEP-19	R4829389
Chromium (Cr)-Total	0.00823		0.00010	mg/L		20-SEP-19	R4829389
Cobalt (Co)-Total	7.36		0.10	ug/L		20-SEP-19	R4829389
Copper (Cu)-Total	0.111		0.00050	mg/L		20-SEP-19	R4829389
Iron (Fe)-Total	8.11		0.010	mg/L		20-SEP-19	R4829389
Lead (Pb)-Total	0.00826		0.000050	mg/L		20-SEP-19	R4829389
Lithium (Li)-Total	0.0133		0.0010	mg/L		20-SEP-19	R4829389
Magnesium (Mg)-Total	96.1		0.10	mg/L		20-SEP-19	R4829389
Manganese (Mn)-Total	0.360		0.00010	mg/L		20-SEP-19	R4829389
Molybdenum (Mo)-Total	0.00272		0.000050	mg/L		20-SEP-19	R4829389
Nickel (Ni)-Total	0.00792		0.00050	mg/L		20-SEP-19	R4829389
Potassium (K)-Total	2.76		0.050	mg/L		20-SEP-19	R4829389
Selenium (Se)-Total	66.9		0.050	ug/L		20-SEP-19	R4829389
Silicon (Si)-Total	17.6		0.10	mg/L		20-SEP-19	R4829389
Silver (Ag)-Total	0.000129		0.000010	mg/L		20-SEP-19	R4829389
Sodium (Na)-Total	1.27		0.050	mg/L		20-SEP-19	R4829389
Strontium (Sr)-Total	0.252		0.00020	mg/L		20-SEP-19	R4829389
Thallium (Tl)-Total	0.000133		0.000010	mg/L		20-SEP-19	R4829389
Tin (Sn)-Total	0.00047		0.00010	mg/L		20-SEP-19	R4829389
Titanium (Ti)-Total	0.076		0.010	mg/L		20-SEP-19	R4829389
Uranium (U)-Total	0.00702		0.000010	mg/L		20-SEP-19	R4829389
Vanadium (V)-Total	0.0117		0.00050	mg/L		20-SEP-19	R4829389
Zinc (Zn)-Total	0.0419		0.0030	mg/L		20-SEP-19	R4829389
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.8		1.0	mg/L		18-SEP-19	R4822673
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	248		1.0	mg/L		18-SEP-19	R4822573
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-SEP-19	R4822573
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-SEP-19	R4822573
Alkalinity, Total (as CaCO3)	248		1.0	mg/L		18-SEP-19	R4822573
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0384		0.0050	mg/L		25-SEP-19	R4840833
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		17-SEP-19	R4818548
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		17-SEP-19	R4818548
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1110		2.0	uS/cm		18-SEP-19	R4822573
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.37	DLHC	0.10	mg/L		17-SEP-19	R4818548
<b>Ion Balance Calculation</b>							
Ion Balance	93.8		-100	%		23-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.2			%		23-SEP-19	
Anion Sum	14.3			meq/L		23-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2348893-1 GH_MW-PC_WG_2019-07-01_NP							
Sampled By: CLIENT on 16-SEP-19 @ 14:10							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation Sum	13.4			meq/L		23-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.76	DLHC	0.025	mg/L		17-SEP-19	R4818548
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		17-SEP-19	R4818548
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0083		0.0010	mg/L		18-SEP-19	R4822988
<b>Oxidation redution potential by elect.</b>							
ORP	343		-1000	mV		18-SEP-19	R4823148
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.436	DLHC	0.050	mg/L		24-SEP-19	R4837689
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	440	DLHC	1.5	mg/L		17-SEP-19	R4818548
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	888	DLHC	20	mg/L		19-SEP-19	R4827268
<b>Total Suspended Solids</b>							
Total Suspended Solids	462	DLHC	2.0	mg/L		19-SEP-19	R4827011
<b>Turbidity</b>							
Turbidity	255		0.10	NTU		18-SEP-19	R4821269
<b>pH</b>							
pH	8.04		0.10	pH		18-SEP-19	R4822573

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 1 of 10

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4822673							
<b>WG3166267-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.8		%		85-115	18-SEP-19
<b>WG3166267-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	18-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4822573							
<b>WG3166288-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.1		%		85-115	18-SEP-19
<b>WG3166288-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4828391							
<b>WG3167870-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.7		%		80-120	20-SEP-19
<b>WG3167870-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-SEP-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4829389							
<b>WG3167793-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			97.4		%		80-120	20-SEP-19
<b>WG3167793-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	20-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Bromide (Br)			102.3		%		85-115	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4835335							
<b>WG3171059-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.7		%		80-120	23-SEP-19
<b>WG3171059-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4835335							
<b>WG3171059-2</b>	<b>LCS</b>							
Total Organic Carbon			97.6		%		80-120	23-SEP-19
<b>WG3171059-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-SEP-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Chloride (Cl)			102.3		%		90-110	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	17-SEP-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4822573							
<b>WG3166288-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	18-SEP-19
<b>WG3166288-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	17-SEP-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4825933							
<b>WG3167859-13</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-SEP-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4825933							
<b>WG3167582-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			102.5		%		80-120	20-SEP-19
<b>WG3167582-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	20-SEP-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4830549</b>							
<b>WG3169075-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			98.8		%		80-120	21-SEP-19
<b>WG3169075-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	21-SEP-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4828391</b>							
<b>WG3167870-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.9		%		80-120	20-SEP-19
Antimony (Sb)-Dissolved			100.7		%		80-120	20-SEP-19
Arsenic (As)-Dissolved			96.6		%		80-120	20-SEP-19
Barium (Ba)-Dissolved			101.2		%		80-120	20-SEP-19
Bismuth (Bi)-Dissolved			98.9		%		80-120	20-SEP-19
Boron (B)-Dissolved			94.3		%		80-120	20-SEP-19
Cadmium (Cd)-Dissolved			95.3		%		80-120	20-SEP-19
Calcium (Ca)-Dissolved			97.1		%		80-120	20-SEP-19
Chromium (Cr)-Dissolved			97.5		%		80-120	20-SEP-19
Cobalt (Co)-Dissolved			98.3		%		80-120	20-SEP-19
Copper (Cu)-Dissolved			98.7		%		80-120	20-SEP-19
Iron (Fe)-Dissolved			93.4		%		80-120	20-SEP-19
Lead (Pb)-Dissolved			95.6		%		80-120	20-SEP-19
Lithium (Li)-Dissolved			96.3		%		80-120	20-SEP-19
Magnesium (Mg)-Dissolved			99.8		%		80-120	20-SEP-19
Manganese (Mn)-Dissolved			97.3		%		80-120	20-SEP-19
Molybdenum (Mo)-Dissolved			102.2		%		80-120	20-SEP-19
Nickel (Ni)-Dissolved			98.7		%		80-120	20-SEP-19
Potassium (K)-Dissolved			92.6		%		80-120	20-SEP-19
Selenium (Se)-Dissolved			96.5		%		80-120	20-SEP-19
Silicon (Si)-Dissolved			98.5		%		60-140	20-SEP-19
Silver (Ag)-Dissolved			102.1		%		80-120	20-SEP-19
Sodium (Na)-Dissolved			95.5		%		80-120	20-SEP-19
Strontium (Sr)-Dissolved			99.98		%		80-120	20-SEP-19
Thallium (Tl)-Dissolved			99.8		%		80-120	20-SEP-19
Tin (Sn)-Dissolved			96.8		%		80-120	20-SEP-19
Titanium (Ti)-Dissolved			93.0		%		80-120	20-SEP-19
Uranium (U)-Dissolved			95.6		%		80-120	20-SEP-19



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4828391</b>							
<b>WG3167870-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			99.7		%		80-120	20-SEP-19
Zinc (Zn)-Dissolved			94.9		%		80-120	20-SEP-19
<b>WG3167870-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-SEP-19

**MET-T-CCMS-VA**

**Water**





## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4829389</b>							
<b>WG3167793-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			107.1		%		80-120	20-SEP-19
Antimony (Sb)-Total			103.1		%		80-120	20-SEP-19
Arsenic (As)-Total			104.8		%		80-120	20-SEP-19
Barium (Ba)-Total			106.6		%		80-120	20-SEP-19
Bismuth (Bi)-Total			101.7		%		80-120	20-SEP-19
Boron (B)-Total			100.6		%		80-120	20-SEP-19
Cadmium (Cd)-Total			101.3		%		80-120	20-SEP-19
Calcium (Ca)-Total			98.6		%		80-120	20-SEP-19
Chromium (Cr)-Total			103.7		%		80-120	20-SEP-19
Cobalt (Co)-Total			102.2		%		80-120	20-SEP-19
Copper (Cu)-Total			101.5		%		80-120	20-SEP-19
Iron (Fe)-Total			98.5		%		80-120	20-SEP-19
Lead (Pb)-Total			97.7		%		80-120	20-SEP-19
Lithium (Li)-Total			99.5		%		80-120	20-SEP-19
Magnesium (Mg)-Total			105.1		%		80-120	20-SEP-19
Manganese (Mn)-Total			101.1		%		80-120	20-SEP-19
Molybdenum (Mo)-Total			103.0		%		80-120	20-SEP-19
Nickel (Ni)-Total			104.8		%		80-120	20-SEP-19
Potassium (K)-Total			108.7		%		80-120	20-SEP-19
Selenium (Se)-Total			102.5		%		80-120	20-SEP-19
Silicon (Si)-Total			104.7		%		80-120	20-SEP-19
Silver (Ag)-Total			99.0		%		80-120	20-SEP-19
Sodium (Na)-Total			109.0		%		80-120	20-SEP-19
Strontium (Sr)-Total			100.0		%		80-120	20-SEP-19
Thallium (Tl)-Total			98.5		%		80-120	20-SEP-19
Tin (Sn)-Total			100.1		%		80-120	20-SEP-19
Titanium (Ti)-Total			100.0		%		80-120	20-SEP-19
Uranium (U)-Total			96.5		%		80-120	20-SEP-19
Vanadium (V)-Total			107.1		%		80-120	20-SEP-19
Zinc (Zn)-Total			102.0		%		80-120	20-SEP-19
<b>WG3167793-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-SEP-19



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4829389</b>							
<b>WG3167793-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	20-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	20-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	20-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	20-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	20-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	20-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	20-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-SEP-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4840833</b>							
<b>WG3172755-2</b>	<b>LCS</b>							
Ammonia as N			113.9		%		85-115	25-SEP-19
<b>WG3172755-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-SEP-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Nitrite (as N)			104.2		%		90-110	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-SEP-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4823148							
<b>WG3165874-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	18-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4837689							
<b>WG3171634-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.1		%		80-120	24-SEP-19
<b>WG3171634-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4822573							
<b>WG3166288-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	18-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4822988							
<b>WG3165491-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.8		%		80-120	18-SEP-19
<b>WG3165491-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.6		%		90-110	17-SEP-19
<b>WG3165148-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4818548							
<b>WG3165148-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	17-SEP-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4827268							
<b>WG3166272-2 LCS</b>								
Total Dissolved Solids			98.3		%		85-115	19-SEP-19
<b>WG3166272-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	19-SEP-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4840829							
<b>WG3172355-11 LCS</b>								
Total Kjeldahl Nitrogen			115.5		%		75-125	24-SEP-19
<b>WG3172355-10 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	24-SEP-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4827011							
<b>WG3165740-6 LCS</b>								
Total Suspended Solids			91.0		%		85-115	19-SEP-19
<b>WG3165740-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	19-SEP-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4821269							
<b>WG3165869-5 LCS</b>								
Turbidity			95.5		%		85-115	18-SEP-19
<b>WG3165869-4 MB</b>								
Turbidity			<0.10		NTU		0.1	18-SEP-19

# Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2348893

Report Date: 25-SEP-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	16-SEP-19 14:10	18-SEP-19 15:15	0.25	49	hours	EHTR-FM
pH	1	16-SEP-19 14:10	18-SEP-19 10:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2348893 were received on 17-SEP-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-07-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Eikford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

**SAMPLE DETAILS**



L2348893-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
GH_MW-PC_WG_2019-07-01_NP	GH_MW-PC	WG		2019/09/16	14:10	G	8

**ANALYSIS REQUESTED**

Y	N	Y	N	Y	N	N	N				
H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3	NONE				
ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA				
1	1	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS      RELINQUISHED BY/AFFILIATION      DATE/TIME      ACCEPTED BY/AFFILIATION      DATE/TIME

*[Signature]*      9/17 9:10

**SERVICE REQUEST (rush subject to availability)**

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Mobile #
Sampler's Signature	Date/Time

8c



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 19-SEP-19  
Report Date: 27-SEP-19 15:30 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2350472  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-07-  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-1 GH_MW-UTC-1S_WG_2019-07-01_NP							
Sampled By: CLIENT on 18-SEP-19 @ 14:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.61		0.50	mg/L		26-SEP-19	R4848288
Total Kjeldahl Nitrogen	0.063		0.050	mg/L		26-SEP-19	R4845471
Mercury (Hg)-Total	0.00122		0.00050	ug/L		25-SEP-19	R4842089
Total Organic Carbon	0.57		0.50	mg/L		26-SEP-19	R4848288
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-SEP-19	23-SEP-19	R4834321
Dissolved Metals Filtration Location	FIELD					20-SEP-19	R4829051
Dissolved Metals Filtration Location	FIELD					22-SEP-19	R4831690
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-SEP-19	21-SEP-19	R4829848
Dissolved Mercury Filtration Location	FIELD					20-SEP-19	R4829210
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					22-SEP-19	R4831690
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-SEP-19	23-SEP-19	R4834321
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Barium (Ba)-Dissolved	0.0747		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-SEP-19	23-SEP-19	R4834321
Boron (B)-Dissolved	0.083		0.010	mg/L	22-SEP-19	23-SEP-19	R4834321
Cadmium (Cd)-Dissolved	0.0062		0.0050	ug/L	22-SEP-19	23-SEP-19	R4834321
Calcium (Ca)-Dissolved	63.9		0.050	mg/L	22-SEP-19	23-SEP-19	R4834321
Chromium (Cr)-Dissolved	0.00010		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-SEP-19	23-SEP-19	R4834321
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	22-SEP-19	23-SEP-19	R4834321
Iron (Fe)-Dissolved	0.014		0.010	mg/L	22-SEP-19	23-SEP-19	R4834321
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-SEP-19	23-SEP-19	R4834321
Lithium (Li)-Dissolved	0.0366		0.0010	mg/L	22-SEP-19	23-SEP-19	R4834321
Magnesium (Mg)-Dissolved	18.5		0.10	mg/L	22-SEP-19	23-SEP-19	R4834321
Manganese (Mn)-Dissolved	0.00687		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Molybdenum (Mo)-Dissolved	0.00154		0.000050	mg/L	22-SEP-19	23-SEP-19	R4834321
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	22-SEP-19	23-SEP-19	R4834321
Potassium (K)-Dissolved	1.19		0.050	mg/L	22-SEP-19	23-SEP-19	R4834321
Selenium (Se)-Dissolved	1.76		0.050	ug/L	22-SEP-19	23-SEP-19	R4834321
Silicon (Si)-Dissolved	4.23		0.050	mg/L	22-SEP-19	23-SEP-19	R4834321
Silver (Ag)-Dissolved	0.000044		0.000010	mg/L	22-SEP-19	23-SEP-19	R4834321
Sodium (Na)-Dissolved	15.3		0.050	mg/L	22-SEP-19	23-SEP-19	R4834321
Strontium (Sr)-Dissolved	1.10		0.00020	mg/L	22-SEP-19	23-SEP-19	R4834321
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-SEP-19	23-SEP-19	R4834321
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-SEP-19	23-SEP-19	R4834321
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-SEP-19	23-SEP-19	R4834321
Uranium (U)-Dissolved	0.000290		0.000010	mg/L	22-SEP-19	23-SEP-19	R4834321
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-SEP-19	23-SEP-19	R4834321
Zinc (Zn)-Dissolved	0.0032		0.0010	mg/L	22-SEP-19	23-SEP-19	R4834321
<b>Hardness</b>							
Hardness (as CaCO3)	236		0.50	mg/L		24-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-SEP-19	R4834321
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		21-SEP-19	R4829848

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-1 GH_MW-UTC-1S_WG_2019-07-01_NP							
Sampled By: CLIENT on 18-SEP-19 @ 14:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.102		0.0030	mg/L		23-SEP-19	R4834321
Antimony (Sb)-Total	0.00010		0.00010	mg/L		23-SEP-19	R4834321
Arsenic (As)-Total	0.00021		0.00010	mg/L		23-SEP-19	R4834321
Barium (Ba)-Total	0.0758		0.00010	mg/L		23-SEP-19	R4834321
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-SEP-19	R4834321
Boron (B)-Total	0.086		0.010	mg/L		23-SEP-19	R4834321
Cadmium (Cd)-Total	0.0177		0.0050	ug/L		23-SEP-19	R4834321
Calcium (Ca)-Total	61.8		0.050	mg/L		23-SEP-19	R4834321
Chromium (Cr)-Total	0.00035		0.00010	mg/L		23-SEP-19	R4834321
Cobalt (Co)-Total	0.13		0.10	ug/L		23-SEP-19	R4834321
Copper (Cu)-Total	0.00299		0.00050	mg/L		23-SEP-19	R4834321
Iron (Fe)-Total	0.836		0.010	mg/L		23-SEP-19	R4834321
Lead (Pb)-Total	0.000175		0.000050	mg/L		23-SEP-19	R4834321
Lithium (Li)-Total	0.0362		0.0010	mg/L		23-SEP-19	R4834321
Magnesium (Mg)-Total	18.6		0.10	mg/L		23-SEP-19	R4834321
Manganese (Mn)-Total	0.0188		0.00010	mg/L		24-SEP-19	R4835709
Molybdenum (Mo)-Total	0.00145		0.000050	mg/L		23-SEP-19	R4834321
Nickel (Ni)-Total	0.00079		0.00050	mg/L		23-SEP-19	R4834321
Potassium (K)-Total	1.19		0.050	mg/L		23-SEP-19	R4834321
Selenium (Se)-Total	1.73		0.050	ug/L		23-SEP-19	R4834321
Silicon (Si)-Total	4.59		0.10	mg/L		23-SEP-19	R4834321
Silver (Ag)-Total	0.000589		0.000010	mg/L		24-SEP-19	R4835709
Sodium (Na)-Total	15.8		0.050	mg/L		23-SEP-19	R4834321
Strontium (Sr)-Total	1.07		0.00020	mg/L		23-SEP-19	R4834321
Thallium (Tl)-Total	0.000011		0.000010	mg/L		23-SEP-19	R4834321
Tin (Sn)-Total	0.00020		0.00010	mg/L		23-SEP-19	R4834321
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-SEP-19	R4834321
Uranium (U)-Total	0.000301		0.000010	mg/L		23-SEP-19	R4834321
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-SEP-19	R4834321
Zinc (Zn)-Total	0.0112		0.0030	mg/L		23-SEP-19	R4834321
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.0		1.0	mg/L		20-SEP-19	R4833269
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	226		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Total (as CaCO3)	226		1.0	mg/L		20-SEP-19	R4833233
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0504		0.0050	mg/L		26-SEP-19	R4846349
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		20-SEP-19	R4834274
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.59		0.50	mg/L		20-SEP-19	R4834274
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	483		2.0	uS/cm		20-SEP-19	R4833233
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.187		0.020	mg/L		20-SEP-19	R4834274
<b>Ion Balance Calculation</b>							
Ion Balance	98.3		-100	%		24-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.9			%		24-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-1 GH_MW-UTC-1S_WG_2019-07-01_NP Sampled By: CLIENT on 18-SEP-19 @ 14:00 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	5.50			meq/L		24-SEP-19	
Cation Sum	5.41			meq/L		24-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0660		0.0050	mg/L		20-SEP-19	R4834274
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		20-SEP-19	R4834274
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0020		0.0010	mg/L		19-SEP-19	R4825150
<b>Oxidation redution potential by elect.</b>							
ORP	295		-1000	mV		20-SEP-19	R4829491
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0042		0.0020	mg/L		26-SEP-19	R4845914
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	36.4		0.30	mg/L		20-SEP-19	R4834274
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	276	DLHC	20	mg/L		24-SEP-19	R4840194
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.5		1.0	mg/L		25-SEP-19	R4846248
<b>Turbidity</b>							
Turbidity	6.33		0.10	NTU		19-SEP-19	R4825230
<b>pH</b>							
pH	8.19		0.10	pH		20-SEP-19	R4833233
L2350472-2 GH_MW-UTC-1S_WG_2019-07-01_FB-HG Sampled By: CLIENT on 18-SEP-19 @ 14:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		25-SEP-19	R4842089
L2350472-3 GH_MW-UTC-1D_WG_2019-07-01_NP Sampled By: CLIENT on 18-SEP-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	6.08		0.50	mg/L		26-SEP-19	R4848288
Total Kjeldahl Nitrogen	0.483		0.050	mg/L		26-SEP-19	R4845471
Mercury (Hg)-Total	0.0164		0.0050	ug/L		25-SEP-19	R4842089
Total Organic Carbon	7.10		0.50	mg/L		26-SEP-19	R4848288
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-SEP-19	23-SEP-19	R4834321
Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4833191
Dissolved Metals Filtration Location	FIELD					20-SEP-19	R4829051
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-SEP-19	21-SEP-19	R4829848
Dissolved Mercury Filtration Location	FIELD					20-SEP-19	R4829210
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4833191
Aluminum (Al)-Dissolved	0.0178		0.0030	mg/L	23-SEP-19	23-SEP-19	R4834321
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Arsenic (As)-Dissolved	0.00152		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Barium (Ba)-Dissolved	0.0556		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	23-SEP-19	R4834321
Boron (B)-Dissolved	0.863		0.010	mg/L	23-SEP-19	23-SEP-19	R4834321

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-3 GH_MW-UTC-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 18-SEP-19 @ 12:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	0.0089		0.0050	ug/L	23-SEP-19	23-SEP-19	R4834321
Calcium (Ca)-Dissolved	2.30		0.050	mg/L	23-SEP-19	23-SEP-19	R4834321
Chromium (Cr)-Dissolved	0.00076		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	23-SEP-19	23-SEP-19	R4834321
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	23-SEP-19	23-SEP-19	R4834321
Iron (Fe)-Dissolved	0.158		0.010	mg/L	23-SEP-19	23-SEP-19	R4834321
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	23-SEP-19	R4834321
Lithium (Li)-Dissolved	1.07		0.0010	mg/L	23-SEP-19	23-SEP-19	R4834321
Magnesium (Mg)-Dissolved	0.63		0.10	mg/L	23-SEP-19	23-SEP-19	R4834321
Manganese (Mn)-Dissolved	0.0157		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Molybdenum (Mo)-Dissolved	0.0169		0.000050	mg/L	23-SEP-19	23-SEP-19	R4834321
Nickel (Ni)-Dissolved	0.00345		0.00050	mg/L	23-SEP-19	23-SEP-19	R4834321
Potassium (K)-Dissolved	0.807		0.050	mg/L	23-SEP-19	23-SEP-19	R4834321
Selenium (Se)-Dissolved	0.814	DTSE	0.050	ug/L	23-SEP-19	23-SEP-19	R4834321
Silicon (Si)-Dissolved	2.69		0.050	mg/L	23-SEP-19	23-SEP-19	R4834321
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-SEP-19	23-SEP-19	R4834321
Sodium (Na)-Dissolved	360		0.050	mg/L	23-SEP-19	23-SEP-19	R4834321
Strontium (Sr)-Dissolved	0.170		0.00020	mg/L	23-SEP-19	23-SEP-19	R4834321
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-SEP-19	23-SEP-19	R4834321
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	23-SEP-19	23-SEP-19	R4834321
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-SEP-19	23-SEP-19	R4834321
Uranium (U)-Dissolved	0.00418		0.000010	mg/L	23-SEP-19	23-SEP-19	R4834321
Vanadium (V)-Dissolved	0.00211		0.00050	mg/L	23-SEP-19	23-SEP-19	R4834321
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	23-SEP-19	23-SEP-19	R4834321
<b>Hardness</b>							
Hardness (as CaCO3)	8.34		0.50	mg/L		23-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.043		0.020	ug/L		23-SEP-19	R4834321
<b>Total Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Total	0.0000180		0.0000050	mg/L		21-SEP-19	R4829848
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.686		0.0030	mg/L		23-SEP-19	R4834321
Antimony (Sb)-Total	0.00022		0.00010	mg/L		23-SEP-19	R4834321
Arsenic (As)-Total	0.00297		0.00010	mg/L		23-SEP-19	R4834321
Barium (Ba)-Total	0.0646		0.00010	mg/L		23-SEP-19	R4834321
Bismuth (Bi)-Total	0.000066		0.000050	mg/L		23-SEP-19	R4834321
Boron (B)-Total	0.880		0.010	mg/L		23-SEP-19	R4834321
Cadmium (Cd)-Total	1.12		0.0050	ug/L		23-SEP-19	R4834321
Calcium (Ca)-Total	2.51		0.050	mg/L		23-SEP-19	R4834321
Chromium (Cr)-Total	0.00248		0.00010	mg/L		23-SEP-19	R4834321
Cobalt (Co)-Total	0.78		0.10	ug/L		23-SEP-19	R4834321
Copper (Cu)-Total	0.00792		0.00050	mg/L		23-SEP-19	R4834321
Iron (Fe)-Total	0.639		0.010	mg/L		23-SEP-19	R4834321
Lead (Pb)-Total	0.00158		0.000050	mg/L		23-SEP-19	R4834321
Lithium (Li)-Total	1.07		0.0010	mg/L		23-SEP-19	R4834321
Magnesium (Mg)-Total	0.76		0.10	mg/L		23-SEP-19	R4834321
Manganese (Mn)-Total	0.0203		0.00010	mg/L		23-SEP-19	R4834321
Molybdenum (Mo)-Total	0.0174		0.000050	mg/L		23-SEP-19	R4834321
Nickel (Ni)-Total	0.0127		0.00050	mg/L		23-SEP-19	R4834321
Potassium (K)-Total	0.998		0.050	mg/L		23-SEP-19	R4834321
Selenium (Se)-Total	0.435		0.050	ug/L		23-SEP-19	R4834321

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-3 GH_MW-UTC-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 18-SEP-19 @ 12:50							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silicon (Si)-Total	4.09		0.10	mg/L		23-SEP-19	R4834321
Silver (Ag)-Total	0.000051		0.000010	mg/L		23-SEP-19	R4834321
Sodium (Na)-Total	393		0.050	mg/L		23-SEP-19	R4834321
Strontium (Sr)-Total	0.184		0.00020	mg/L		23-SEP-19	R4834321
Thallium (Tl)-Total	0.000011		0.000010	mg/L		23-SEP-19	R4834321
Tin (Sn)-Total	0.00061		0.00010	mg/L		23-SEP-19	R4834321
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-SEP-19	R4834321
Uranium (U)-Total	0.00430		0.000010	mg/L		23-SEP-19	R4834321
Vanadium (V)-Total	0.00397		0.00050	mg/L		23-SEP-19	R4834321
Zinc (Zn)-Total	0.108		0.0030	mg/L		23-SEP-19	R4834321
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		20-SEP-19	R4833269
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	716		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Carbonate (as CaCO3)	53.0		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		20-SEP-19	R4833233
Alkalinity, Total (as CaCO3)	769		1.0	mg/L		20-SEP-19	R4833233
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.255		0.0050	mg/L		26-SEP-19	R4846349
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.38	DLHC	0.25	mg/L		20-SEP-19	R4834274
<b>Chloride in Water by IC</b>							
Chloride (Cl)	68.2	DLHC	2.5	mg/L		20-SEP-19	R4834274
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1590		2.0	uS/cm		20-SEP-19	R4833233
<b>Fluoride in Water by IC</b>							
Fluoride (F)	6.19	DLHC	0.10	mg/L		20-SEP-19	R4834274
<b>Ion Balance Calculation</b>							
Ion Balance	89.2		-100	%		23-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.7			%		23-SEP-19	
Anion Sum	17.8			meq/L		23-SEP-19	
Cation Sum	15.9			meq/L		23-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		20-SEP-19	R4834274
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		20-SEP-19	R4834274
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.303	DLHC	0.050	mg/L		19-SEP-19	R4825150
<b>Oxidation redution potential by elect.</b>							
ORP	427		-1000	mV		20-SEP-19	R4829491
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.337	DLHC	0.025	mg/L		26-SEP-19	R4845914
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	8.7	DLHC	1.5	mg/L		20-SEP-19	R4834274
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	961	DLHC	20	mg/L		24-SEP-19	R4840194
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		25-SEP-19	R4846248
<b>Turbidity</b>							
Turbidity	6.31		0.10	NTU		19-SEP-19	R4825230

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2350472-3    GH_MW-UTC-1D_WG_2019-07-01_NP Sampled By:    CLIENT on 18-SEP-19 @ 12:50 Matrix:        WG <b>pH</b> pH	8.69		0.10	pH		20-SEP-19	R4833233

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
<p>This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.</p>			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-07-

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 1 of 16

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4833269</b>							
<b>WG3169665-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Acidity (as CaCO3)		8.0	7.6		mg/L	4.4	20	20-SEP-19
<b>WG3169665-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	20-SEP-19
<b>WG3169665-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	20-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4833233</b>							
<b>WG3169668-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	20-SEP-19
<b>WG3169668-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169434-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.3		%		80-120	23-SEP-19
<b>WG3169876-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.2		%		80-120	23-SEP-19
<b>WG3169434-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-SEP-19
<b>WG3169876-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-SEP-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169607-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-SEP-19
<b>WG3169607-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			94.8		%		80-120	23-SEP-19
<b>WG3169607-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834274</b>							
<b>WG3170340-6</b>	<b>LCS</b>							
Bromide (Br)			104.1		%		85-115	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848288</b>							
<b>WG3174889-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Dissolved Organic Carbon		0.61	0.61		mg/L	0.1	20	26-SEP-19
<b>WG3174889-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.1		%		80-120	26-SEP-19
<b>WG3174889-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-SEP-19
<b>WG3174889-4</b>	<b>MS</b>	<b>L2350472-3</b>						
Dissolved Organic Carbon			91.8		%		70-130	26-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848288</b>							
<b>WG3174889-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Total Organic Carbon		0.57	0.70	J	mg/L	0.13	1	26-SEP-19
<b>WG3174889-2</b>	<b>LCS</b>							
Total Organic Carbon			107.1		%		80-120	26-SEP-19
<b>WG3174889-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-SEP-19
<b>WG3174889-4</b>	<b>MS</b>	<b>L2350472-3</b>						
Total Organic Carbon			92.8		%		70-130	26-SEP-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834274</b>							
<b>WG3170340-6</b>	<b>LCS</b>							
Chloride (Cl)			103.9		%		90-110	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-SEP-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4833233</b>							
<b>WG3169668-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.3		%		90-110	20-SEP-19
<b>WG3169668-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-SEP-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834274</b>							
<b>WG3170340-6</b>	<b>LCS</b>							
Fluoride (F)			106.3		%		90-110	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-SEP-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4829848</b>							
<b>WG3168609-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.2		%		80-120	21-SEP-19
<b>WG3168609-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	21-SEP-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4829848</b>							
<b>WG3168790-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.7		%		80-120	21-SEP-19
<b>WG3168790-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	21-SEP-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4842089</b>							
<b>WG3173088-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			91.2		%		80-120	25-SEP-19
<b>WG3173088-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	25-SEP-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169434-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.8		%		80-120	23-SEP-19
Antimony (Sb)-Dissolved			102.7		%		80-120	23-SEP-19
Arsenic (As)-Dissolved			103.4		%		80-120	23-SEP-19
Barium (Ba)-Dissolved			100.4		%		80-120	23-SEP-19
Bismuth (Bi)-Dissolved			96.4		%		80-120	23-SEP-19
Boron (B)-Dissolved			97.7		%		80-120	23-SEP-19
Cadmium (Cd)-Dissolved			99.6		%		80-120	23-SEP-19
Calcium (Ca)-Dissolved			100.1		%		80-120	23-SEP-19
Chromium (Cr)-Dissolved			99.9		%		80-120	23-SEP-19
Cobalt (Co)-Dissolved			100.9		%		80-120	23-SEP-19
Copper (Cu)-Dissolved			100.8		%		80-120	23-SEP-19
Iron (Fe)-Dissolved			98.6		%		80-120	23-SEP-19
Lead (Pb)-Dissolved			98.5		%		80-120	23-SEP-19
Lithium (Li)-Dissolved			96.9		%		80-120	23-SEP-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	23-SEP-19
Manganese (Mn)-Dissolved			106.6		%		80-120	23-SEP-19
Molybdenum (Mo)-Dissolved			110.7		%		80-120	23-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169434-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			102.4		%		80-120	23-SEP-19
Potassium (K)-Dissolved			103.0		%		80-120	23-SEP-19
Selenium (Se)-Dissolved			101.8		%		80-120	23-SEP-19
Silicon (Si)-Dissolved			101.9		%		60-140	23-SEP-19
Silver (Ag)-Dissolved			105.1		%		80-120	23-SEP-19
Sodium (Na)-Dissolved			95.1		%		80-120	23-SEP-19
Strontium (Sr)-Dissolved			105.8		%		80-120	23-SEP-19
Thallium (Tl)-Dissolved			98.2		%		80-120	23-SEP-19
Tin (Sn)-Dissolved			100.9		%		80-120	23-SEP-19
Titanium (Ti)-Dissolved			99.9		%		80-120	23-SEP-19
Uranium (U)-Dissolved			98.3		%		80-120	23-SEP-19
Vanadium (V)-Dissolved			104.0		%		80-120	23-SEP-19
Zinc (Zn)-Dissolved			103.1		%		80-120	23-SEP-19
<b>WG3169876-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.0		%		80-120	23-SEP-19
Antimony (Sb)-Dissolved			101.4		%		80-120	23-SEP-19
Arsenic (As)-Dissolved			102.8		%		80-120	23-SEP-19
Barium (Ba)-Dissolved			102.3		%		80-120	23-SEP-19
Bismuth (Bi)-Dissolved			96.8		%		80-120	23-SEP-19
Boron (B)-Dissolved			99.6		%		80-120	23-SEP-19
Cadmium (Cd)-Dissolved			101.6		%		80-120	23-SEP-19
Calcium (Ca)-Dissolved			102.2		%		80-120	23-SEP-19
Chromium (Cr)-Dissolved			101.9		%		80-120	23-SEP-19
Cobalt (Co)-Dissolved			99.3		%		80-120	23-SEP-19
Copper (Cu)-Dissolved			101.5		%		80-120	23-SEP-19
Iron (Fe)-Dissolved			97.7		%		80-120	23-SEP-19
Lead (Pb)-Dissolved			100.1		%		80-120	23-SEP-19
Lithium (Li)-Dissolved			102.3		%		80-120	23-SEP-19
Magnesium (Mg)-Dissolved			99.5		%		80-120	23-SEP-19
Manganese (Mn)-Dissolved			103.8		%		80-120	23-SEP-19
Molybdenum (Mo)-Dissolved			105.5		%		80-120	23-SEP-19
Nickel (Ni)-Dissolved			105.5		%		80-120	23-SEP-19
Potassium (K)-Dissolved			103.7		%		80-120	23-SEP-19
Selenium (Se)-Dissolved			100.6		%		80-120	23-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169876-2</b>	<b>LCS</b>							
Silicon (Si)-Dissolved			99.2		%		60-140	23-SEP-19
Silver (Ag)-Dissolved			101.9		%		80-120	23-SEP-19
Sodium (Na)-Dissolved			101.3		%		80-120	23-SEP-19
Strontium (Sr)-Dissolved			102.0		%		80-120	23-SEP-19
Thallium (Tl)-Dissolved			99.8		%		80-120	23-SEP-19
Tin (Sn)-Dissolved			99.5		%		80-120	23-SEP-19
Titanium (Ti)-Dissolved			98.6		%		80-120	23-SEP-19
Uranium (U)-Dissolved			99.9		%		80-120	23-SEP-19
Vanadium (V)-Dissolved			104.9		%		80-120	23-SEP-19
Zinc (Zn)-Dissolved			102.2		%		80-120	23-SEP-19
<b>WG3169434-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169434-1 MB</b>		<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
<b>WG3169876-1 MB</b>		<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Sodium (Na)-Dissolved			0.057	B	mg/L		0.05	23-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169876-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169607-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Aluminum (Al)-Total		0.102	0.0916		mg/L	10	20	23-SEP-19
Antimony (Sb)-Total		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-19
Arsenic (As)-Total		0.00021	0.00018		mg/L	14	20	23-SEP-19
Barium (Ba)-Total		0.0758	0.0734		mg/L	3.3	20	23-SEP-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-19
Boron (B)-Total		0.086	0.085		mg/L	0.7	20	23-SEP-19
Cadmium (Cd)-Total		0.0000177	0.0000157		mg/L	12	20	23-SEP-19
Calcium (Ca)-Total		61.8	62.2		mg/L	0.7	20	23-SEP-19
Chromium (Cr)-Total		0.00035	0.00030		mg/L	14	20	23-SEP-19
Cobalt (Co)-Total		0.00013	0.00014		mg/L	5.7	20	23-SEP-19
Copper (Cu)-Total		0.00299	0.00296		mg/L	0.9	20	23-SEP-19
Iron (Fe)-Total		0.836	0.771		mg/L	8.0	20	23-SEP-19
Lead (Pb)-Total		0.000175	0.000171		mg/L	2.4	20	23-SEP-19
Lithium (Li)-Total		0.0362	0.0358		mg/L	1.2	20	23-SEP-19
Magnesium (Mg)-Total		18.6	18.9		mg/L	1.2	20	23-SEP-19
Molybdenum (Mo)-Total		0.00145	0.00147		mg/L	1.8	20	23-SEP-19
Nickel (Ni)-Total		0.00079	0.00082		mg/L	3.7	20	23-SEP-19
Potassium (K)-Total		1.19	1.18		mg/L	0.6	20	23-SEP-19
Selenium (Se)-Total		0.00173	0.00173		mg/L	0.2	20	23-SEP-19
Silicon (Si)-Total		4.59	4.52		mg/L	1.5	20	23-SEP-19
Sodium (Na)-Total		15.8	15.7		mg/L	0.1	20	23-SEP-19
Strontium (Sr)-Total		1.07	1.06		mg/L	1.8	20	23-SEP-19
Thallium (Tl)-Total		0.000011	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-19
Tin (Sn)-Total		0.00020	0.00022		mg/L	8.3	20	23-SEP-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-SEP-19
Uranium (U)-Total		0.000301	0.000301		mg/L	0.1	20	23-SEP-19
Vanadium (V)-Total		<0.00050	0.00053	RPD-NA	mg/L	N/A	20	23-SEP-19





## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169607-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Zinc (Zn)-Total		0.0112	0.0111		mg/L	1.2	20	23-SEP-19
<b>WG3169607-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.1		%		80-120	23-SEP-19
Antimony (Sb)-Total			105.5		%		80-120	23-SEP-19
Arsenic (As)-Total			103.6		%		80-120	23-SEP-19
Barium (Ba)-Total			99.5		%		80-120	23-SEP-19
Bismuth (Bi)-Total			94.8		%		80-120	23-SEP-19
Boron (B)-Total			93.5		%		80-120	23-SEP-19
Cadmium (Cd)-Total			99.0		%		80-120	23-SEP-19
Calcium (Ca)-Total			99.7		%		80-120	23-SEP-19
Chromium (Cr)-Total			102.4		%		80-120	23-SEP-19
Cobalt (Co)-Total			101.2		%		80-120	23-SEP-19
Copper (Cu)-Total			101.0		%		80-120	23-SEP-19
Iron (Fe)-Total			100.2		%		80-120	23-SEP-19
Lead (Pb)-Total			97.0		%		80-120	23-SEP-19
Lithium (Li)-Total			94.6		%		80-120	23-SEP-19
Magnesium (Mg)-Total			98.5		%		80-120	23-SEP-19
Manganese (Mn)-Total			106.3		%		80-120	23-SEP-19
Molybdenum (Mo)-Total			107.9		%		80-120	23-SEP-19
Nickel (Ni)-Total			102.7		%		80-120	23-SEP-19
Potassium (K)-Total			103.1		%		80-120	23-SEP-19
Selenium (Se)-Total			99.6		%		80-120	23-SEP-19
Silicon (Si)-Total			104.4		%		80-120	23-SEP-19
Silver (Ag)-Total			102.8		%		80-120	23-SEP-19
Sodium (Na)-Total			102.7		%		80-120	23-SEP-19
Strontium (Sr)-Total			110.1		%		80-120	23-SEP-19
Thallium (Tl)-Total			97.0		%		80-120	23-SEP-19
Tin (Sn)-Total			99.6		%		80-120	23-SEP-19
Titanium (Ti)-Total			95.7		%		80-120	23-SEP-19
Uranium (U)-Total			96.0		%		80-120	23-SEP-19
Vanadium (V)-Total			104.0		%		80-120	23-SEP-19
Zinc (Zn)-Total			102.5		%		80-120	23-SEP-19
<b>WG3169607-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834321</b>							
<b>WG3169607-1</b>	<b>MB</b>							
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	23-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	23-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	23-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	23-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	23-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-SEP-19
<b>Batch</b>	<b>R4835709</b>							
<b>WG3170607-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Aluminum (Al)-Total		0.102	0.106		mg/L	1.8	20	24-SEP-19
Antimony (Sb)-Total		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-SEP-19
Arsenic (As)-Total		0.00021	0.00020		mg/L	0.6	20	24-SEP-19
Barium (Ba)-Total		0.0758	0.0791		mg/L	1.5	20	24-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4835709</b>							
<b>WG3170607-3</b>	<b>DUP</b>	<b>L2350472-1</b>						
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-SEP-19
Boron (B)-Total		0.086	0.087		mg/L	3.6	20	24-SEP-19
Cadmium (Cd)-Total		0.0000177	0.0000148		mg/L	5.1	20	24-SEP-19
Calcium (Ca)-Total		61.8	62.2		mg/L	4.3	20	24-SEP-19
Cobalt (Co)-Total		0.00013	0.00013		mg/L	4.5	20	24-SEP-19
Copper (Cu)-Total		0.00299	0.00296		mg/L	1.1	20	24-SEP-19
Iron (Fe)-Total		0.836	0.828		mg/L	0.5	20	24-SEP-19
Lead (Pb)-Total		0.000175	0.000192		mg/L	8.1	20	24-SEP-19
Lithium (Li)-Total		0.0362	0.0345		mg/L	3.2	20	24-SEP-19
Magnesium (Mg)-Total		18.6	19.2		mg/L	2.3	20	24-SEP-19
Manganese (Mn)-Total		0.0188	0.0184		mg/L	2.2	20	24-SEP-19
Molybdenum (Mo)-Total		0.00145	0.00137		mg/L	2.9	20	24-SEP-19
Nickel (Ni)-Total		0.00079	0.00107		mg/L	4.0	20	24-SEP-19
Potassium (K)-Total		1.19	1.19		mg/L	3.9	20	24-SEP-19
Selenium (Se)-Total		0.00173	0.00159		mg/L	5.2	20	24-SEP-19
Silicon (Si)-Total		4.59	4.62		mg/L	0.7	20	24-SEP-19
Silver (Ag)-Total		0.000589	0.000643		mg/L	8.7	20	24-SEP-19
Sodium (Na)-Total		15.8	16.6		mg/L	1.7	20	24-SEP-19
Strontium (Sr)-Total		1.07	1.03		mg/L	2.8	20	24-SEP-19
Thallium (Tl)-Total		0.000011	<0.000010	RPD-NA	mg/L	N/A	20	24-SEP-19
Tin (Sn)-Total		0.00020	0.00022		mg/L	4.8	20	24-SEP-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-SEP-19
Uranium (U)-Total		0.000301	0.000310		mg/L	4.4	20	24-SEP-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-SEP-19
Zinc (Zn)-Total		0.0112	0.0111		mg/L	0.6	20	24-SEP-19
<b>WG3170607-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			108.2		%		80-120	24-SEP-19
Antimony (Sb)-Total			107.5		%		80-120	24-SEP-19
Arsenic (As)-Total			101.8		%		80-120	24-SEP-19
Barium (Ba)-Total			104.9		%		80-120	24-SEP-19
Bismuth (Bi)-Total			95.4		%		80-120	24-SEP-19
Boron (B)-Total			98.5		%		80-120	24-SEP-19
Cadmium (Cd)-Total			103.1		%		80-120	24-SEP-19
Calcium (Ca)-Total			110.3		%		80-120	24-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4835709</b>							
<b>WG3170607-2</b>	<b>LCS</b>							
Chromium (Cr)-Total			105.1		%		80-120	24-SEP-19
Cobalt (Co)-Total			103.2		%		80-120	24-SEP-19
Copper (Cu)-Total			101.7		%		80-120	24-SEP-19
Iron (Fe)-Total			104.7		%		80-120	24-SEP-19
Lead (Pb)-Total			100.9		%		80-120	24-SEP-19
Lithium (Li)-Total			92.9		%		80-120	24-SEP-19
Magnesium (Mg)-Total			104.0		%		80-120	24-SEP-19
Manganese (Mn)-Total			104.2		%		80-120	24-SEP-19
Molybdenum (Mo)-Total			112.7		%		80-120	24-SEP-19
Nickel (Ni)-Total			101.8		%		80-120	24-SEP-19
Potassium (K)-Total			104.1		%		80-120	24-SEP-19
Selenium (Se)-Total			102.1		%		80-120	24-SEP-19
Silicon (Si)-Total			105.0		%		80-120	24-SEP-19
Silver (Ag)-Total			107.7		%		80-120	24-SEP-19
Sodium (Na)-Total			109.3		%		80-120	24-SEP-19
Strontium (Sr)-Total			127.5	MES	%		80-120	24-SEP-19
Thallium (Tl)-Total			97.1		%		80-120	24-SEP-19
Tin (Sn)-Total			104.8		%		80-120	24-SEP-19
Titanium (Ti)-Total			99.1		%		80-120	24-SEP-19
Uranium (U)-Total			103.7		%		80-120	24-SEP-19
Vanadium (V)-Total			104.6		%		80-120	24-SEP-19
Zinc (Zn)-Total			105.4		%		80-120	24-SEP-19
<b>WG3170607-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	24-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	24-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-SEP-19



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4835709</b>							
<b>WG3170607-1</b>	<b>MB</b>							
Iron (Fe)-Total			<0.010		mg/L		0.01	24-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	24-SEP-19
Selenium (Se)-Total			0.000054	B	mg/L		0.00005	24-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	24-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	24-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-SEP-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4846349</b>							
<b>WG3174314-22</b>	<b>LCS</b>							
Ammonia as N			109.1		%		85-115	26-SEP-19
<b>WG3174314-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-SEP-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4834274</b>							
<b>WG3170340-6</b>	<b>LCS</b>							
Nitrite (as N)			104.7		%		90-110	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-SEP-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4834274							
<b>WG3170340-6</b>	<b>LCS</b>							
Nitrate (as N)			105.5		%		90-110	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4829491							
<b>WG3168649-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	20-SEP-19
<b>WG3168649-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	20-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4845914							
<b>WG3173881-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.4		%		80-120	26-SEP-19
<b>WG3173881-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	26-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4833233							
<b>WG3169668-14</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	20-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4825150							
<b>WG3167037-9</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.7		%		80-120	19-SEP-19
<b>WG3167037-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	19-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4834274							
<b>WG3170340-6</b>	<b>LCS</b>							
Sulfate (SO4)			108.6		%		90-110	20-SEP-19
<b>WG3170340-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	20-SEP-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 14 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4840194</b>							
<b>WG3170862-2</b>	<b>LCS</b>							
Total Dissolved Solids			96.2		%		85-115	24-SEP-19
<b>WG3170862-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	24-SEP-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4845471</b>							
<b>WG3173918-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.7		%		75-125	26-SEP-19
<b>WG3173918-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4846248</b>							
<b>WG3172206-4</b>	<b>LCS</b>							
Total Suspended Solids			91.9		%		85-115	25-SEP-19
<b>WG3172206-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	25-SEP-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4825230</b>							
<b>WG3167319-15</b>	<b>DUP</b>	<b>L2350472-3</b>						
Turbidity		6.31	7.03		NTU	11	15	19-SEP-19
<b>WG3167319-11</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	19-SEP-19
<b>WG3167319-14</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	19-SEP-19
<b>WG3167319-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-SEP-19
<b>WG3167319-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	19-SEP-19

# Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 15 of 16

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2350472

Report Date: 27-SEP-19

Page 16 of 16

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	18-SEP-19 14:00	20-SEP-19 09:30	0.25	43	hours	EHTR-FM
	3	18-SEP-19 12:50	20-SEP-19 09:30	0.25	45	hours	EHTR-FM
pH	1	18-SEP-19 14:00	20-SEP-19 11:00	0.25	45	hours	EHTR-FM
	3	18-SEP-19 12:50	20-SEP-19 11:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2350472 were received on 19-SEP-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-07-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh Stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED																	
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Filtered?	F1	Field	L1	Lab	FL1	Field & Lab	NT	Non	
								Y	N	Y	N	Y	N	N	N										
								H2SO4	H2SO4	HCL	HCL	HNO3	NONE	HNO3	NONE										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			DK	9/19 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

500



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 20-SEP-19  
Report Date: 30-SEP-19 14:34 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2351219  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2351219-1 GH_GA-MW-4_WG_2019-07-01_NP							
Sampled By: CLIENT on 19-SEP-19 @ 12:48							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-SEP-19	R4849690
Total Kjeldahl Nitrogen	0.222		0.050	mg/L		26-SEP-19	R4845471
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-SEP-19	R4847189
Total Organic Carbon	0.56		0.50	mg/L		27-SEP-19	R4849690
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-SEP-19	25-SEP-19	R4841728
Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4832797
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-SEP-19	24-SEP-19	R4837488
Dissolved Mercury Filtration Location	FIELD					23-SEP-19	R4833355
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4832797
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-SEP-19	25-SEP-19	R4841728
Antimony (Sb)-Dissolved	0.00016		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Barium (Ba)-Dissolved	0.0849		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Boron (B)-Dissolved	0.012		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Cadmium (Cd)-Dissolved	0.0075		0.0050	ug/L	23-SEP-19	25-SEP-19	R4841728
Calcium (Ca)-Dissolved	54.6		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	23-SEP-19	25-SEP-19	R4841728
Copper (Cu)-Dissolved	0.00062		0.00020	mg/L	23-SEP-19	25-SEP-19	R4841728
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Lithium (Li)-Dissolved	0.0184		0.0010	mg/L	23-SEP-19	25-SEP-19	R4841728
Magnesium (Mg)-Dissolved	21.9		0.10	mg/L	23-SEP-19	25-SEP-19	R4841728
Manganese (Mn)-Dissolved	0.00010		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Molybdenum (Mo)-Dissolved	0.00178		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	23-SEP-19	25-SEP-19	R4841728
Potassium (K)-Dissolved	1.13		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Selenium (Se)-Dissolved	2.58		0.050	ug/L	23-SEP-19	25-SEP-19	R4841728
Silicon (Si)-Dissolved	2.33		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Sodium (Na)-Dissolved	5.38		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Strontium (Sr)-Dissolved	0.201		0.00020	mg/L	23-SEP-19	25-SEP-19	R4841728
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Uranium (U)-Dissolved	0.00168		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-SEP-19	25-SEP-19	R4841728
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	23-SEP-19	25-SEP-19	R4841728
<b>Hardness</b>							
Hardness (as CaCO3)	227		0.50	mg/L		25-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-SEP-19	R4834049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0034		0.0030	mg/L		23-SEP-19	R4834049
Antimony (Sb)-Total	0.00016		0.00010	mg/L		23-SEP-19	R4834049

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2351219-1 GH_GA-MW-4_WG_2019-07-01_NP							
Sampled By: CLIENT on 19-SEP-19 @ 12:48							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	<0.00010		0.00010	mg/L		23-SEP-19	R4834049
Barium (Ba)-Total	0.0818		0.00010	mg/L		23-SEP-19	R4834049
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-SEP-19	R4834049
Boron (B)-Total	0.011		0.010	mg/L		23-SEP-19	R4834049
Cadmium (Cd)-Total	0.0086		0.0050	ug/L		23-SEP-19	R4834049
Calcium (Ca)-Total	53.0		0.050	mg/L		23-SEP-19	R4834049
Chromium (Cr)-Total	0.00022		0.00010	mg/L		23-SEP-19	R4834049
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-SEP-19	R4834049
Copper (Cu)-Total	0.00243		0.00050	mg/L		23-SEP-19	R4834049
Iron (Fe)-Total	<0.010		0.010	mg/L		23-SEP-19	R4834049
Lead (Pb)-Total	<0.000050		0.000050	mg/L		23-SEP-19	R4834049
Lithium (Li)-Total	0.0176		0.0010	mg/L		23-SEP-19	R4834049
Magnesium (Mg)-Total	21.8		0.10	mg/L		23-SEP-19	R4834049
Manganese (Mn)-Total	0.00018		0.00010	mg/L		23-SEP-19	R4834049
Molybdenum (Mo)-Total	0.00181		0.000050	mg/L		23-SEP-19	R4834049
Nickel (Ni)-Total	0.00174		0.00050	mg/L		23-SEP-19	R4834049
Potassium (K)-Total	1.06		0.050	mg/L		23-SEP-19	R4834049
Selenium (Se)-Total	2.68		0.050	ug/L		23-SEP-19	R4834049
Silicon (Si)-Total	2.52		0.10	mg/L		23-SEP-19	R4834049
Silver (Ag)-Total	<0.000010		0.000010	mg/L		23-SEP-19	R4834049
Sodium (Na)-Total	5.28		0.050	mg/L		23-SEP-19	R4834049
Strontium (Sr)-Total	0.203		0.00020	mg/L		23-SEP-19	R4834049
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		23-SEP-19	R4834049
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-SEP-19	R4834049
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-SEP-19	R4834049
Uranium (U)-Total	0.00163		0.000010	mg/L		23-SEP-19	R4834049
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-SEP-19	R4834049
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-SEP-19	R4834049
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4844341
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	196		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Carbonate (as CaCO3)	5.2		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Total (as CaCO3)	201		1.0	mg/L		25-SEP-19	R4844308
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		28-SEP-19	R4849985
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		20-SEP-19	R4830212
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.42		0.50	mg/L		20-SEP-19	R4830212
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	435		2.0	uS/cm		25-SEP-19	R4844308
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.195		0.020	mg/L		20-SEP-19	R4830212
<b>Ion Balance Calculation</b>							
Ion Balance	92.1		-100	%		26-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.1			%		26-SEP-19	
Anion Sum	5.20			meq/L		26-SEP-19	
Cation Sum	4.79			meq/L		26-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2351219-1 GH_GA-MW-4_WG_2019-07-01_NP Sampled By: CLIENT on 19-SEP-19 @ 12:48 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.883		0.0050	mg/L		20-SEP-19	R4830212
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		20-SEP-19	R4830212
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		20-SEP-19	R4829488
<b>Oxidation redution potential by elect.</b> ORP	388		-1000	mV		20-SEP-19	R4829491
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-SEP-19	R4837689
<b>Sulfate in Water by IC</b> Sulfate (SO4)	49.7		0.30	mg/L		20-SEP-19	R4830212
<b>Total Dissolved Solids</b> Total Dissolved Solids	260	DLHC	20	mg/L		24-SEP-19	R4840194
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		25-SEP-19	R4846248
<b>Turbidity</b> Turbidity	0.17		0.10	NTU		20-SEP-19	R4829528
<b>pH</b> pH	8.37		0.10	pH		25-SEP-19	R4844308
L2351219-2 GH_GA-MW-2_WG_2019-07-01_NP Sampled By: CLIENT on 19-SEP-19 @ 14:10 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		27-SEP-19	R4849690
Total Kjeldahl Nitrogen	<0.25	TKNI	0.25	mg/L		26-SEP-19	R4845471
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-SEP-19	R4847189
Total Organic Carbon	<0.50		0.50	mg/L		27-SEP-19	R4849690
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-SEP-19	25-SEP-19	R4841728
Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4832797
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-SEP-19	24-SEP-19	R4837488
Dissolved Mercury Filtration Location	FIELD					23-SEP-19	R4833355
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					23-SEP-19	R4832797
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-SEP-19	25-SEP-19	R4841728
Antimony (Sb)-Dissolved	0.00170		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Barium (Ba)-Dissolved	0.0457		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Boron (B)-Dissolved	0.020		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Cadmium (Cd)-Dissolved	<0.060	DLM	0.060	ug/L	23-SEP-19	25-SEP-19	R4841728
Calcium (Ca)-Dissolved	140		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Cobalt (Co)-Dissolved	0.45		0.10	ug/L	23-SEP-19	25-SEP-19	R4841728
Copper (Cu)-Dissolved	0.0117		0.00020	mg/L	23-SEP-19	25-SEP-19	R4841728
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Lithium (Li)-Dissolved	0.0170		0.0010	mg/L	23-SEP-19	25-SEP-19	R4841728
Magnesium (Mg)-Dissolved	43.7		0.10	mg/L	23-SEP-19	25-SEP-19	R4841728

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2351219-2 GH_GA-MW-2_WG_2019-07-01_NP							
Sampled By: CLIENT on 19-SEP-19 @ 14:10							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.0811		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Molybdenum (Mo)-Dissolved	0.0448		0.000050	mg/L	23-SEP-19	25-SEP-19	R4841728
Nickel (Ni)-Dissolved	0.00691		0.00050	mg/L	23-SEP-19	25-SEP-19	R4841728
Potassium (K)-Dissolved	1.36		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Selenium (Se)-Dissolved	17.9		0.050	ug/L	23-SEP-19	25-SEP-19	R4841728
Silicon (Si)-Dissolved	3.49		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Sodium (Na)-Dissolved	10.1		0.050	mg/L	23-SEP-19	25-SEP-19	R4841728
Strontium (Sr)-Dissolved	0.625		0.00020	mg/L	23-SEP-19	25-SEP-19	R4841728
Thallium (Tl)-Dissolved	0.000010		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	23-SEP-19	25-SEP-19	R4841728
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-SEP-19	25-SEP-19	R4841728
Uranium (U)-Dissolved	0.00796		0.000010	mg/L	23-SEP-19	25-SEP-19	R4841728
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-SEP-19	25-SEP-19	R4841728
Zinc (Zn)-Dissolved	0.0101		0.0010	mg/L	23-SEP-19	25-SEP-19	R4841728
<b>Hardness</b>							
Hardness (as CaCO3)	529		0.50	mg/L		25-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-SEP-19	R4834049
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0099		0.0030	mg/L		23-SEP-19	R4834049
Antimony (Sb)-Total	0.00202		0.00010	mg/L		23-SEP-19	R4834049
Arsenic (As)-Total	0.00028		0.00010	mg/L		23-SEP-19	R4834049
Barium (Ba)-Total	0.0435		0.00010	mg/L		23-SEP-19	R4834049
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-SEP-19	R4834049
Boron (B)-Total	0.019		0.010	mg/L		23-SEP-19	R4834049
Cadmium (Cd)-Total	<0.070	DLM	0.070	ug/L		23-SEP-19	R4834049
Calcium (Ca)-Total	142		0.050	mg/L		23-SEP-19	R4834049
Chromium (Cr)-Total	0.00017		0.00010	mg/L		23-SEP-19	R4834049
Cobalt (Co)-Total	2.05		0.10	ug/L		23-SEP-19	R4834049
Copper (Cu)-Total	0.125		0.00050	mg/L		23-SEP-19	R4834049
Iron (Fe)-Total	0.036		0.010	mg/L		23-SEP-19	R4834049
Lead (Pb)-Total	0.000089		0.000050	mg/L		23-SEP-19	R4834049
Lithium (Li)-Total	0.0168		0.0010	mg/L		23-SEP-19	R4834049
Magnesium (Mg)-Total	43.2		0.10	mg/L		23-SEP-19	R4834049
Manganese (Mn)-Total	0.199		0.00010	mg/L		23-SEP-19	R4834049
Molybdenum (Mo)-Total	0.0488		0.000050	mg/L		23-SEP-19	R4834049
Nickel (Ni)-Total	0.00813		0.00050	mg/L		23-SEP-19	R4834049
Potassium (K)-Total	1.28		0.050	mg/L		23-SEP-19	R4834049
Selenium (Se)-Total	16.5		0.050	ug/L		23-SEP-19	R4834049
Silicon (Si)-Total	3.71		0.10	mg/L		23-SEP-19	R4834049
Silver (Ag)-Total	0.000010		0.000010	mg/L		23-SEP-19	R4834049
Sodium (Na)-Total	9.67		0.050	mg/L		23-SEP-19	R4834049
Strontium (Sr)-Total	0.629		0.00020	mg/L		23-SEP-19	R4834049
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		23-SEP-19	R4834049
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-SEP-19	R4834049
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-SEP-19	R4834049
Uranium (U)-Total	0.00752		0.000010	mg/L		23-SEP-19	R4834049
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-SEP-19	R4834049
Zinc (Zn)-Total	0.0107		0.0030	mg/L		23-SEP-19	R4834049
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2351219-2 GH_GA-MW-2_WG_2019-07-01_NP							
Sampled By: CLIENT on 19-SEP-19 @ 14:10							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	4.8		1.0	mg/L		25-SEP-19	R4844341
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	222		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		25-SEP-19	R4844308
Alkalinity, Total (as CaCO <sub>3</sub> )	222		1.0	mg/L		25-SEP-19	R4844308
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		28-SEP-19	R4849985
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		20-SEP-19	R4830212
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.3	DLHC	2.5	mg/L		20-SEP-19	R4830212
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1010		2.0	uS/cm		25-SEP-19	R4844308
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.14	DLHC	0.10	mg/L		20-SEP-19	R4830212
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-6.1			%		26-SEP-19	
Anion Sum	12.5			meq/L		26-SEP-19	
Cation Sum	11.1			meq/L		26-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	88.6		-100	%		26-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	7.21	DLHC	0.025	mg/L		20-SEP-19	R4830212
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.143	DLHC	0.0050	mg/L		20-SEP-19	R4830212
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		20-SEP-19	R4829488
<b>Oxidation redution potential by elect.</b>							
ORP	365		-1000	mV		20-SEP-19	R4829491
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0060		0.0020	mg/L		24-SEP-19	R4837689
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	351	DLHC	1.5	mg/L		20-SEP-19	R4830212
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	773	DLHC	20	mg/L		24-SEP-19	R4840194
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.0		1.0	mg/L		25-SEP-19	R4846248
<b>Turbidity</b>							
Turbidity	1.67		0.10	NTU		20-SEP-19	R4829528
<b>pH</b>							
pH	8.12		0.10	pH		25-SEP-19	R4844308

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 1 of 10

Client: TECK COAL LIMITED (GREENHILLS)  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4844341							
<b>WG3173463-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.4		%		85-115	25-SEP-19
<b>WG3173463-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	25-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4844308							
<b>WG3173470-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.3		%		85-115	25-SEP-19
<b>WG3173470-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4841728							
<b>WG3169761-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.5		%		80-120	25-SEP-19
<b>WG3169761-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-SEP-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4834049							
<b>WG3169240-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			90.8		%		80-120	23-SEP-19
<b>WG3169240-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4830212							
<b>WG3168903-6</b>	<b>LCS</b>							
Bromide (Br)			105.4		%		85-115	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4849690							
<b>WG3175949-3</b>	<b>DUP</b>	<b>L2351219-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-SEP-19
<b>WG3175949-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.2		%		80-120	27-SEP-19
<b>WG3175949-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849690</b>							
<b>WG3175949-3</b>	<b>DUP</b>	<b>L2351219-2</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-SEP-19
<b>WG3175949-2</b>	<b>LCS</b>							
Total Organic Carbon			108.7		%		80-120	27-SEP-19
<b>WG3175949-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-SEP-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4830212</b>							
<b>WG3168903-6</b>	<b>LCS</b>							
Chloride (Cl)			102.8		%		90-110	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-SEP-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4844308</b>							
<b>WG3173470-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	25-SEP-19
<b>WG3173470-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-SEP-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4830212</b>							
<b>WG3168903-6</b>	<b>LCS</b>							
Fluoride (F)			109.2		%		90-110	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-SEP-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4837488</b>							
<b>WG3169869-3</b>	<b>DUP</b>	<b>L2351219-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-SEP-19
<b>WG3169869-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.4		%		80-120	24-SEP-19
<b>WG3169869-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-SEP-19
<b>WG3169869-4</b>	<b>MS</b>	<b>L2351219-1</b>						
Mercury (Hg)-Dissolved			106.8		%		70-130	24-SEP-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4847189</b>							
<b>WG3174489-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.9		%		80-120	26-SEP-19
<b>WG3174489-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	26-SEP-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4841728</b>							
<b>WG3169761-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.6		%		80-120	25-SEP-19
Antimony (Sb)-Dissolved			95.6		%		80-120	25-SEP-19
Arsenic (As)-Dissolved			94.9		%		80-120	25-SEP-19
Barium (Ba)-Dissolved			97.7		%		80-120	25-SEP-19
Bismuth (Bi)-Dissolved			99.9		%		80-120	25-SEP-19
Boron (B)-Dissolved			101.4		%		80-120	25-SEP-19
Cadmium (Cd)-Dissolved			100.7		%		80-120	25-SEP-19
Calcium (Ca)-Dissolved			98.8		%		80-120	25-SEP-19
Chromium (Cr)-Dissolved			98.8		%		80-120	25-SEP-19
Cobalt (Co)-Dissolved			98.2		%		80-120	25-SEP-19
Copper (Cu)-Dissolved			96.8		%		80-120	25-SEP-19
Iron (Fe)-Dissolved			99.6		%		80-120	25-SEP-19
Lead (Pb)-Dissolved			99.9		%		80-120	25-SEP-19
Lithium (Li)-Dissolved			98.8		%		80-120	25-SEP-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	25-SEP-19
Manganese (Mn)-Dissolved			98.0		%		80-120	25-SEP-19
Molybdenum (Mo)-Dissolved			99.6		%		80-120	25-SEP-19
Nickel (Ni)-Dissolved			97.9		%		80-120	25-SEP-19
Potassium (K)-Dissolved			98.8		%		80-120	25-SEP-19
Selenium (Se)-Dissolved			98.3		%		80-120	25-SEP-19
Silicon (Si)-Dissolved			101.0		%		60-140	25-SEP-19
Silver (Ag)-Dissolved			101.0		%		80-120	25-SEP-19
Sodium (Na)-Dissolved			104.1		%		80-120	25-SEP-19
Strontium (Sr)-Dissolved			101.1		%		80-120	25-SEP-19
Thallium (Tl)-Dissolved			96.3		%		80-120	25-SEP-19
Tin (Sn)-Dissolved			98.1		%		80-120	25-SEP-19
Titanium (Ti)-Dissolved			96.8		%		80-120	25-SEP-19
Uranium (U)-Dissolved			104.5		%		80-120	25-SEP-19



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4841728</b>							
<b>WG3169761-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			102.3		%		80-120	25-SEP-19
Zinc (Zn)-Dissolved			105.0		%		80-120	25-SEP-19
<b>WG3169761-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-SEP-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4834049</b>							
<b>WG3169240-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.4		%		80-120	23-SEP-19
Antimony (Sb)-Total			102.0		%		80-120	23-SEP-19
Arsenic (As)-Total			96.3		%		80-120	23-SEP-19
Barium (Ba)-Total			93.8		%		80-120	23-SEP-19
Bismuth (Bi)-Total			98.2		%		80-120	23-SEP-19
Boron (B)-Total			89.5		%		80-120	23-SEP-19
Cadmium (Cd)-Total			96.8		%		80-120	23-SEP-19
Calcium (Ca)-Total			94.1		%		80-120	23-SEP-19
Chromium (Cr)-Total			97.1		%		80-120	23-SEP-19
Cobalt (Co)-Total			98.3		%		80-120	23-SEP-19
Copper (Cu)-Total			96.7		%		80-120	23-SEP-19
Iron (Fe)-Total			95.7		%		80-120	23-SEP-19
Lead (Pb)-Total			99.2		%		80-120	23-SEP-19
Lithium (Li)-Total			93.4		%		80-120	23-SEP-19
Magnesium (Mg)-Total			100.2		%		80-120	23-SEP-19
Manganese (Mn)-Total			101.1		%		80-120	23-SEP-19
Molybdenum (Mo)-Total			99.5		%		80-120	23-SEP-19
Nickel (Ni)-Total			97.7		%		80-120	23-SEP-19
Potassium (K)-Total			101.0		%		80-120	23-SEP-19
Selenium (Se)-Total			93.6		%		80-120	23-SEP-19
Silicon (Si)-Total			104.5		%		80-120	23-SEP-19
Silver (Ag)-Total			98.8		%		80-120	23-SEP-19
Sodium (Na)-Total			105.6		%		80-120	23-SEP-19
Strontium (Sr)-Total			103.3		%		80-120	23-SEP-19
Thallium (Tl)-Total			96.8		%		80-120	23-SEP-19
Tin (Sn)-Total			96.7		%		80-120	23-SEP-19
Titanium (Ti)-Total			91.9		%		80-120	23-SEP-19
Uranium (U)-Total			103.4		%		80-120	23-SEP-19
Vanadium (V)-Total			100.1		%		80-120	23-SEP-19
Zinc (Zn)-Total			99.1		%		80-120	23-SEP-19
<b>WG3169240-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-SEP-19





## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4834049</b>							
<b>WG3169240-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	23-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	23-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	23-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	23-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	23-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-SEP-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4849985</b>							
<b>WG3176017-2</b>	<b>LCS</b>							
Ammonia as N			101.1		%		85-115	28-SEP-19
<b>WG3176017-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-SEP-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4830212							
<b>WG3168903-6</b>	<b>LCS</b>							
Nitrite (as N)			104.1		%		90-110	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-SEP-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4830212							
<b>WG3168903-6</b>	<b>LCS</b>							
Nitrate (as N)			103.3		%		90-110	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4829491							
<b>WG3168649-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			229		mV		210-230	20-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4837689							
<b>WG3171634-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.5		%		80-120	24-SEP-19
<b>WG3171634-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4844308							
<b>WG3173470-5</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	25-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4829488							
<b>WG3168487-11</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.8		%		80-120	20-SEP-19
<b>WG3168487-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4830212							
<b>WG3168903-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.2		%		90-110	20-SEP-19
<b>WG3168903-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4830212							
<b>WG3168903-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	20-SEP-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4840194							
<b>WG3170862-8 LCS</b>								
Total Dissolved Solids			102.5		%		85-115	24-SEP-19
<b>WG3170862-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	24-SEP-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4845471							
<b>WG3173918-10 LCS</b>								
Total Kjeldahl Nitrogen			100.8		%		75-125	26-SEP-19
<b>WG3173918-6 LCS</b>								
Total Kjeldahl Nitrogen			89.7		%		75-125	26-SEP-19
<b>WG3173918-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-19
<b>WG3173918-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-SEP-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4846248							
<b>WG3172206-6 LCS</b>								
Total Suspended Solids			91.9		%		85-115	25-SEP-19
<b>WG3172206-8 LCS</b>								
Total Suspended Solids			93.8		%		85-115	25-SEP-19
<b>WG3172206-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	25-SEP-19
<b>WG3172206-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	25-SEP-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4829528							
<b>WG3168646-3 LCS</b>								
Turbidity			94.5		%		85-115	20-SEP-19
<b>WG3168646-2 MB</b>								
Turbidity			<0.10		NTU		0.1	20-SEP-19

# Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2351219

Report Date: 30-SEP-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	19-SEP-19 12:48	20-SEP-19 02:45	0.25	14	hours	EHTR-FM
	2	19-SEP-19 14:10	20-SEP-19 02:45	0.25	12	hours	EHTR-FM
pH	1	19-SEP-19 12:48	25-SEP-19 09:00	0.25	140	hours	EHTR-FM
	2	19-SEP-19 14:10	25-SEP-19 09:00	0.25	139	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2351219 were received on 20-SEP-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> GHO_QTR_GW_2019-07-01		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>			
Facility Name / Job# Greenhills Operation		Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD	
Project Manager Jenni Kropp		Lab Contact Lyudmyla Shvets		Email 1: Leigh.Stickney			X	X	X	
Email jennifer.kropp@teck.com		Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: jennifer.kropp@teck.com			X	X	X	
Address P.O. BOX 5000		Address 2559 29 Street NE		Email 3: teckcoal@equisonline.com					X	
City Elkford		Province BC	City Calgary	Province AB	Email 4: jaydon.francis@teck.com			X	X	X
Postal Code V0B1H0		Country Canada	Postal Code T1Y 7B5	Country Canada	Email 5: Brendan.Peachey@teck.com			X	X	X
Phone Number 250-865-3048		Phone Number 403 407 1794		Email 6: DL-Equils-GHO-Field@teck.com			X	X	X	
				PO number 610013						

SAMPLE DETAILS								ANALYSIS REQUESTED															
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Filtered	Flt	Lab	FLD	Field	Lab	Cont	
GH_GA-MW-4_WG_2019-07-01_NP	GH_GA-MW-4	WG		2019/09/19	12:48	G	8	1	1	1		1	1	1	1								
GH_GA-MW-2_WG_2019-07-01_NP	GH_GA-MW-2	WG		2019/09/19	14:10	G	8	1	1	1		1	1	1	1								

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>Dk</i>	<i>9/20 0850</i>

<b>SERVICE REQUEST (rush subject to availability)</b>		<b>SAMPLER'S INFO</b>	
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Sampler's Name	Mobile #
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time



L2351219-COFC

*8°C*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 24-SEP-19  
Report Date: 07-OCT-19 16:20 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2352881  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-07  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352881-1 GH_GA-MW-3_WG_2019-07-01_NP							
Sampled By: CLIENT on 23-SEP-19 @ 13:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Ammonia, Total (as N)	0.321		0.0050	mg/L		04-OCT-19	R4860658
Dissolved Organic Carbon	0.61		0.50	mg/L		01-OCT-19	R4855349
Total Kjeldahl Nitrogen	<0.50	DLM	0.50	mg/L		30-SEP-19	R4850591
Mercury (Hg)-Total	0.00077		0.00050	ug/L		27-SEP-19	R4844929
Total Organic Carbon	0.68		0.50	mg/L		01-OCT-19	R4855349
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-SEP-19	27-SEP-19	R4844376
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4844313
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0025	DLM	0.0025	mg/L	26-SEP-19	26-SEP-19	R4842828
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4845309
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4844313
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-SEP-19	27-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Barium (Ba)-Dissolved	0.0909		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Boron (B)-Dissolved	0.221		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-SEP-19	27-SEP-19	R4844376
Calcium (Ca)-Dissolved	72.7		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-SEP-19	27-SEP-19	R4844376
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Iron (Fe)-Dissolved	0.011		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Lithium (Li)-Dissolved	0.0833		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
Magnesium (Mg)-Dissolved	43.7		0.10	mg/L	26-SEP-19	27-SEP-19	R4844376
Manganese (Mn)-Dissolved	0.00605		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Molybdenum (Mo)-Dissolved	0.000060		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Potassium (K)-Dissolved	2.33		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Selenium (Se)-Dissolved	21.1	DTSE	0.050	ug/L	26-SEP-19	27-SEP-19	R4844376
Silicon (Si)-Dissolved	4.61		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Sodium (Na)-Dissolved	32.6		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Strontium (Sr)-Dissolved	2.12		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Uranium (U)-Dissolved	0.000334		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Zinc (Zn)-Dissolved	0.0054		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
<b>Hardness</b>							
Hardness (as CaCO3)	362		0.50	mg/L		27-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.028		0.020	ug/L		26-SEP-19	R4842108
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0808		0.0030	mg/L		26-SEP-19	R4842108

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352881-1 GH_GA-MW-3_WG_2019-07-01_NP							
Sampled By: CLIENT on 23-SEP-19 @ 13:05							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Antimony (Sb)-Total	0.00021		0.00010	mg/L		26-SEP-19	R4842108
Arsenic (As)-Total	0.00030		0.00010	mg/L		26-SEP-19	R4842108
Barium (Ba)-Total	0.0975		0.00010	mg/L		26-SEP-19	R4842108
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4842108
Boron (B)-Total	0.253		0.010	mg/L		26-SEP-19	R4842108
Cadmium (Cd)-Total	0.0449		0.0050	ug/L		26-SEP-19	R4842108
Calcium (Ca)-Total	70.8		0.050	mg/L		26-SEP-19	R4842108
Chromium (Cr)-Total	0.00051		0.00010	mg/L		26-SEP-19	R4842108
Cobalt (Co)-Total	0.11		0.10	ug/L		26-SEP-19	R4842108
Copper (Cu)-Total	0.0765		0.00050	mg/L		26-SEP-19	R4842108
Iron (Fe)-Total	0.254		0.010	mg/L		26-SEP-19	R4842108
Lead (Pb)-Total	0.000484		0.000050	mg/L		26-SEP-19	R4842108
Lithium (Li)-Total	0.0902		0.0010	mg/L		26-SEP-19	R4842108
Magnesium (Mg)-Total	38.2		0.10	mg/L		26-SEP-19	R4842108
Manganese (Mn)-Total	0.0144		0.00010	mg/L		26-SEP-19	R4842108
Molybdenum (Mo)-Total	0.000209		0.000050	mg/L		26-SEP-19	R4842108
Nickel (Ni)-Total	0.00153		0.00050	mg/L		26-SEP-19	R4842108
Potassium (K)-Total	2.34		0.050	mg/L		26-SEP-19	R4842108
Selenium (Se)-Total	12.0		0.050	ug/L		26-SEP-19	R4842108
Silicon (Si)-Total	4.87		0.10	mg/L		26-SEP-19	R4842108
Silver (Ag)-Total	0.000015		0.000010	mg/L		26-SEP-19	R4842108
Sodium (Na)-Total	30.8		0.050	mg/L		26-SEP-19	R4842108
Strontium (Sr)-Total	1.97		0.00020	mg/L		26-SEP-19	R4842108
Thallium (Tl)-Total	0.000091		0.000010	mg/L		26-SEP-19	R4842108
Tin (Sn)-Total	0.00039		0.00010	mg/L		26-SEP-19	R4842108
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-SEP-19	R4842108
Uranium (U)-Total	0.000450		0.000010	mg/L		26-SEP-19	R4842108
Vanadium (V)-Total	0.00052		0.00050	mg/L		26-SEP-19	R4842108
Zinc (Zn)-Total	0.0037		0.0030	mg/L		26-SEP-19	R4842108
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.6		1.0	mg/L		27-SEP-19	R4850471
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	249		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Total (as CaCO3)	249		1.0	mg/L		27-SEP-19	R4850463
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		24-SEP-19	R4839971
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.21		0.50	mg/L		24-SEP-19	R4839971
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	767		2.0	uS/cm		27-SEP-19	R4850463
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.613		0.020	mg/L		24-SEP-19	R4839971
<b>Ion Balance Calculation</b>							
Ion Balance	109		-100	%		30-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	4.5			%		30-SEP-19	
Anion Sum	7.95			meq/L		30-SEP-19	
Cation Sum	8.70			meq/L		30-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352881-1 GH_GA-MW-3_WG_2019-07-01_NP Sampled By: CLIENT on 23-SEP-19 @ 13:05 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.498		0.0050	mg/L		24-SEP-19	R4839971
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	0.710		0.0010	mg/L		24-SEP-19	R4839971
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-SEP-19	R4838211
<b>Oxidation redution potential by elect.</b> ORP	276		-1000	mV		25-SEP-19	R4841969
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0150		0.0020	mg/L		30-SEP-19	R4850643
<b>Sulfate in Water by IC</b> Sulfate (SO4)	128		0.30	mg/L		24-SEP-19	R4839971
<b>Total Dissolved Solids</b> Total Dissolved Solids	425	DLHC	20	mg/L		27-SEP-19	R4849824
<b>Total Suspended Solids</b> Total Suspended Solids	8.0		1.0	mg/L		29-SEP-19	R4850453
<b>Turbidity</b> Turbidity	43.4		0.10	NTU		24-SEP-19	R4838850
<b>pH</b> pH	7.88		0.10	pH		27-SEP-19	R4850463
L2352881-2 GH_MW-ERSC-1_WG_2019-07-01_NP Sampled By: CLIENT on 23-SEP-19 @ 14:30 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.62		0.50	mg/L		01-OCT-19	R4855349
Total Kjeldahl Nitrogen	0.223		0.050	mg/L		30-SEP-19	R4850591
Mercury (Hg)-Total	0.00053		0.00050	ug/L		27-SEP-19	R4844929
Total Organic Carbon	1.62		0.50	mg/L		01-OCT-19	R4855349
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-SEP-19	27-SEP-19	R4844376
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4844313
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0025	DLM	0.0025	mg/L	26-SEP-19	26-SEP-19	R4842828
Dissolved Mercury Filtration Location	FIELD					26-SEP-19	R4845309
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4844313
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-SEP-19	27-SEP-19	R4844376
Antimony (Sb)-Dissolved	0.00015		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00059		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Barium (Ba)-Dissolved	0.179		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Boron (B)-Dissolved	0.022		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-SEP-19	27-SEP-19	R4844376
Calcium (Ca)-Dissolved	92.0		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cobalt (Co)-Dissolved	0.29		0.10	ug/L	26-SEP-19	27-SEP-19	R4844376
Copper (Cu)-Dissolved	0.00040		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Iron (Fe)-Dissolved	0.398		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Lithium (Li)-Dissolved	0.0130		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
Magnesium (Mg)-Dissolved	28.6		0.10	mg/L	26-SEP-19	27-SEP-19	R4844376

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352881-2 GH_MW-ERSC-1_WG_2019-07-01_NP							
Sampled By: CLIENT on 23-SEP-19 @ 14:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.0554		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Molybdenum (Mo)-Dissolved	0.00500		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Nickel (Ni)-Dissolved	0.00533		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Potassium (K)-Dissolved	0.907		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Selenium (Se)-Dissolved	1.82	DTSE	0.050	ug/L	26-SEP-19	27-SEP-19	R4844376
Silicon (Si)-Dissolved	5.72		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Sodium (Na)-Dissolved	5.43		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.382		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Tin (Sn)-Dissolved	0.00021		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Uranium (U)-Dissolved	0.000811		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Zinc (Zn)-Dissolved	0.0023		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
<b>Hardness</b>							
Hardness (as CaCO3)	348		0.50	mg/L		27-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		26-SEP-19	R4842108
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0203		0.0030	mg/L		26-SEP-19	R4842108
Antimony (Sb)-Total	0.00016		0.00010	mg/L		26-SEP-19	R4842108
Arsenic (As)-Total	0.00069		0.00010	mg/L		26-SEP-19	R4842108
Barium (Ba)-Total	0.182		0.00010	mg/L		26-SEP-19	R4842108
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		26-SEP-19	R4842108
Boron (B)-Total	0.026		0.010	mg/L		26-SEP-19	R4842108
Cadmium (Cd)-Total	0.0388		0.0050	ug/L		26-SEP-19	R4842108
Calcium (Ca)-Total	101		0.050	mg/L		26-SEP-19	R4842108
Chromium (Cr)-Total	0.00037		0.00010	mg/L		26-SEP-19	R4842108
Cobalt (Co)-Total	0.33		0.10	ug/L		26-SEP-19	R4842108
Copper (Cu)-Total	0.00226		0.00050	mg/L		26-SEP-19	R4842108
Iron (Fe)-Total	0.506		0.010	mg/L		26-SEP-19	R4842108
Lead (Pb)-Total	0.000050		0.000050	mg/L		26-SEP-19	R4842108
Lithium (Li)-Total	0.0154		0.0010	mg/L		26-SEP-19	R4842108
Magnesium (Mg)-Total	25.9		0.10	mg/L		26-SEP-19	R4842108
Manganese (Mn)-Total	0.0591		0.00010	mg/L		26-SEP-19	R4842108
Molybdenum (Mo)-Total	0.00480		0.000050	mg/L		26-SEP-19	R4842108
Nickel (Ni)-Total	0.00576		0.00050	mg/L		26-SEP-19	R4842108
Potassium (K)-Total	0.975		0.050	mg/L		26-SEP-19	R4842108
Selenium (Se)-Total	0.928		0.050	ug/L		26-SEP-19	R4842108
Silicon (Si)-Total	6.21		0.10	mg/L		26-SEP-19	R4842108
Silver (Ag)-Total	0.000062		0.000010	mg/L		26-SEP-19	R4842108
Sodium (Na)-Total	5.54		0.050	mg/L		26-SEP-19	R4842108
Strontium (Sr)-Total	0.366		0.00020	mg/L		26-SEP-19	R4842108
Thallium (Tl)-Total	0.000025		0.000010	mg/L		26-SEP-19	R4842108
Tin (Sn)-Total	<0.00010		0.00010	mg/L		26-SEP-19	R4842108
Titanium (Ti)-Total	<0.010		0.010	mg/L		26-SEP-19	R4842108
Uranium (U)-Total	0.000975		0.000010	mg/L		26-SEP-19	R4842108
Vanadium (V)-Total	0.00062		0.00050	mg/L		26-SEP-19	R4842108
Zinc (Zn)-Total	0.0031		0.0030	mg/L		26-SEP-19	R4842108
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2352881-2 GH_MW-ERSC-1_WG_2019-07-01_NP							
Sampled By: CLIENT on 23-SEP-19 @ 14:30							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	8.1		1.0	mg/L		27-SEP-19	R4850471
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	342		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		27-SEP-19	R4850463
Alkalinity, Total (as CaCO <sub>3</sub> )	342		1.0	mg/L		27-SEP-19	R4850463
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0536		0.0050	mg/L		01-OCT-19	R4853190
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		24-SEP-19	R4839971
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.14		0.50	mg/L		24-SEP-19	R4839971
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	636		2.0	uS/cm		27-SEP-19	R4850463
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.198		0.020	mg/L		24-SEP-19	R4839971
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.3			%		30-SEP-19	
Anion Sum	7.41			meq/L		30-SEP-19	
Cation Sum	7.23			meq/L		30-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	97.5		-100	%		30-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0903		0.0050	mg/L		24-SEP-19	R4839971
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		24-SEP-19	R4839971
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-SEP-19	R4838211
<b>Oxidation redution potential by elect.</b>							
ORP	283		-1000	mV		25-SEP-19	R4841969
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0104		0.0020	mg/L		30-SEP-19	R4850643
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	23.7		0.30	mg/L		24-SEP-19	R4839971
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	325	DLHC	20	mg/L		27-SEP-19	R4849824
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.9		1.0	mg/L		29-SEP-19	R4850453
<b>Turbidity</b>							
Turbidity	5.39		0.10	NTU		24-SEP-19	R4838850
<b>pH</b>							
pH	8.04		0.10	pH		27-SEP-19	R4850463

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP10	11C - Samples Received with temperature >10 Degrees C

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-F-ED	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-07

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 1 of 10

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4850471							
<b>WG3176654-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.7		%		85-115	27-SEP-19
<b>WG3176654-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	27-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4850463							
<b>WG3176672-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	27-SEP-19
<b>WG3176672-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4844376							
<b>WG3173792-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.2		%		80-120	27-SEP-19
<b>WG3173792-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-SEP-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4842108							
<b>WG3172867-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.7		%		80-120	26-SEP-19
<b>WG3172867-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	26-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Bromide (Br)			99.2		%		85-115	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4855349							
<b>WG3179387-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.8		%		80-120	01-OCT-19
<b>WG3179387-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-OCT-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4855349							
<b>WG3179387-2</b>	<b>LCS</b>							
Total Organic Carbon			93.4		%		80-120	01-OCT-19
<b>WG3179387-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-OCT-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-SEP-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4850463							
<b>WG3176672-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.2		%		90-110	27-SEP-19
<b>WG3176672-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Fluoride (F)			108.5		%		90-110	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-SEP-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4842828							
<b>WG3173856-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.5		%		80-120	26-SEP-19
<b>WG3173856-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	26-SEP-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							
Batch	R4844929							
<b>WG3174009-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			98.2		%		80-120	26-SEP-19
<b>WG3174009-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	26-SEP-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4844376</b>							
<b>WG3173792-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.7		%		80-120	27-SEP-19
Antimony (Sb)-Dissolved			97.3		%		80-120	27-SEP-19
Arsenic (As)-Dissolved			95.3		%		80-120	27-SEP-19
Barium (Ba)-Dissolved			96.5		%		80-120	27-SEP-19
Bismuth (Bi)-Dissolved			97.5		%		80-120	27-SEP-19
Boron (B)-Dissolved			96.5		%		80-120	27-SEP-19
Cadmium (Cd)-Dissolved			97.4		%		80-120	27-SEP-19
Calcium (Ca)-Dissolved			99.0		%		80-120	27-SEP-19
Chromium (Cr)-Dissolved			98.7		%		80-120	27-SEP-19
Cobalt (Co)-Dissolved			94.3		%		80-120	27-SEP-19
Copper (Cu)-Dissolved			93.1		%		80-120	27-SEP-19
Iron (Fe)-Dissolved			96.4		%		80-120	27-SEP-19
Lead (Pb)-Dissolved			94.2		%		80-120	27-SEP-19
Lithium (Li)-Dissolved			95.2		%		80-120	27-SEP-19
Magnesium (Mg)-Dissolved			96.7		%		80-120	27-SEP-19
Manganese (Mn)-Dissolved			98.6		%		80-120	27-SEP-19
Molybdenum (Mo)-Dissolved			99.1		%		80-120	27-SEP-19
Nickel (Ni)-Dissolved			97.1		%		80-120	27-SEP-19
Potassium (K)-Dissolved			94.8		%		80-120	27-SEP-19
Selenium (Se)-Dissolved			101.9		%		80-120	27-SEP-19
Silicon (Si)-Dissolved			99.9		%		60-140	27-SEP-19
Silver (Ag)-Dissolved			100.6		%		80-120	27-SEP-19
Sodium (Na)-Dissolved			97.9		%		80-120	27-SEP-19
Strontium (Sr)-Dissolved			99.6		%		80-120	27-SEP-19
Thallium (Tl)-Dissolved			95.6		%		80-120	27-SEP-19
Tin (Sn)-Dissolved			95.9		%		80-120	27-SEP-19
Titanium (Ti)-Dissolved			95.8		%		80-120	27-SEP-19
Uranium (U)-Dissolved			94.0		%		80-120	27-SEP-19
Vanadium (V)-Dissolved			96.9		%		80-120	27-SEP-19
Zinc (Zn)-Dissolved			91.1		%		80-120	27-SEP-19
<b>WG3173792-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4844376</b>							
<b>WG3173792-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4842108</b>							
<b>WG3172867-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			92.6		%		80-120	26-SEP-19
Antimony (Sb)-Total			99.2		%		80-120	26-SEP-19
Arsenic (As)-Total			93.2		%		80-120	26-SEP-19
Barium (Ba)-Total			95.6		%		80-120	26-SEP-19



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4842108</b>							
<b>WG3172867-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			103.1		%		80-120	26-SEP-19
Boron (B)-Total			99.4		%		80-120	26-SEP-19
Cadmium (Cd)-Total			93.7		%		80-120	26-SEP-19
Calcium (Ca)-Total			106.4		%		80-120	26-SEP-19
Chromium (Cr)-Total			93.3		%		80-120	26-SEP-19
Cobalt (Co)-Total			94.6		%		80-120	26-SEP-19
Copper (Cu)-Total			93.4		%		80-120	26-SEP-19
Iron (Fe)-Total			94.3		%		80-120	26-SEP-19
Lead (Pb)-Total			105.7		%		80-120	26-SEP-19
Lithium (Li)-Total			100.2		%		80-120	26-SEP-19
Magnesium (Mg)-Total			93.2		%		80-120	26-SEP-19
Manganese (Mn)-Total			98.5		%		80-120	26-SEP-19
Molybdenum (Mo)-Total			92.6		%		80-120	26-SEP-19
Nickel (Ni)-Total			92.8		%		80-120	26-SEP-19
Potassium (K)-Total			96.8		%		80-120	26-SEP-19
Selenium (Se)-Total			97.2		%		80-120	26-SEP-19
Silicon (Si)-Total			107.4		%		80-120	26-SEP-19
Silver (Ag)-Total			92.7		%		80-120	26-SEP-19
Sodium (Na)-Total			97.6		%		80-120	26-SEP-19
Strontium (Sr)-Total			105.3		%		80-120	26-SEP-19
Thallium (Tl)-Total			103.6		%		80-120	26-SEP-19
Tin (Sn)-Total			92.2		%		80-120	26-SEP-19
Titanium (Ti)-Total			88.7		%		80-120	26-SEP-19
Uranium (U)-Total			115.0		%		80-120	26-SEP-19
Vanadium (V)-Total			96.5		%		80-120	26-SEP-19
Zinc (Zn)-Total			92.4		%		80-120	26-SEP-19
<b>WG3172867-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	26-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	26-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	26-SEP-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	26-SEP-19



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4842108</b>							
<b>WG3172867-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	26-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	26-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	26-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	26-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	26-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	26-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	26-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	26-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	26-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	26-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	26-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	26-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	26-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	26-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	26-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	26-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	26-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	26-SEP-19
<b>NH3-F-ED</b>		<b>Water</b>						
<b>Batch</b>	<b>R4860658</b>							
<b>WG3182782-2</b>	<b>LCS</b>							
Ammonia, Total (as N)			100.9		%		85-115	04-OCT-19
<b>WG3182782-1</b>	<b>MB</b>							
Ammonia, Total (as N)			<0.0050		mg/L		0.005	04-OCT-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4853190</b>							
<b>WG3178754-30</b>	<b>LCS</b>							
Ammonia as N			95.6		%		85-115	01-OCT-19
<b>WG3178754-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-OCT-19



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Nitrite (as N)			104.7		%		90-110	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	24-SEP-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	24-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4841969							
<b>WG3173057-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	25-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4850643							
<b>WG3176807-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			109.2		%		80-120	30-SEP-19
<b>WG3176807-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4850463							
<b>WG3176672-2</b>	<b>LCS</b>							
pH			6.92		pH		6.9-7.1	27-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4838211							
<b>WG3171761-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.7		%		80-120	24-SEP-19
<b>WG3171761-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4839971							
<b>WG3172476-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.1		%		90-110	24-SEP-19
<b>WG3172476-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Matrix: <b>Water</b>								
Batch: <b>R4839971</b>								
<b>WG3172476-5 MB</b>								
Sulfate (SO4)								
			<0.30		mg/L		0.3	24-SEP-19
<b>SOLIDS-TDS-CL</b>								
Matrix: <b>Water</b>								
Batch: <b>R4849824</b>								
<b>WG3174771-14 LCS</b>								
Total Dissolved Solids								
			93.5		%		85-115	27-SEP-19
<b>WG3174771-13 MB</b>								
Total Dissolved Solids								
			<10		mg/L		10	27-SEP-19
<b>TKN-L-F-CL</b>								
Matrix: <b>Water</b>								
Batch: <b>R4850591</b>								
<b>WG3177005-2 LCS</b>								
Total Kjeldahl Nitrogen								
			96.3		%		75-125	30-SEP-19
<b>WG3177005-1 MB</b>								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	30-SEP-19
<b>TSS-L-CL</b>								
Matrix: <b>Water</b>								
Batch: <b>R4850453</b>								
<b>WG3175296-2 LCS</b>								
Total Suspended Solids								
			97.8		%		85-115	29-SEP-19
<b>WG3175296-1 MB</b>								
Total Suspended Solids								
			<1.0		mg/L		1	29-SEP-19
<b>TURBIDITY-CL</b>								
Matrix: <b>Water</b>								
Batch: <b>R4838850</b>								
<b>WG3172137-6 DUP</b>								
Turbidity								
		<b>L2352881-2</b>	5.39		NTU	0.6	15	24-SEP-19
<b>WG3172137-5 LCS</b>								
Turbidity								
			98.5		%		85-115	24-SEP-19
<b>WG3172137-4 MB</b>								
Turbidity								
			<0.10		NTU		0.1	24-SEP-19

# Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate



# Quality Control Report

Workorder: L2352881

Report Date: 07-OCT-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	23-SEP-19 13:05	25-SEP-19 12:20	0.25	47	hours	EHTR-FM
	2	23-SEP-19 14:30	25-SEP-19 12:20	0.25	46	hours	EHTR-FM
pH	1	23-SEP-19 13:05	27-SEP-19 12:00	0.25	95	hours	EHTR-FM
	2	23-SEP-19 14:30	27-SEP-19 12:00	0.25	94	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2352881 were received on 24-SEP-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-07-01**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-Equis-GHO-Field@teck.com	X	X	X
								PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED																
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA	HG-T-U-CVAF-VA	Y	N	Y	N	Y	N	N	N	
GH_GA-MW-3_WG_2019-07-01_NP	GH_GA-MW-3	WG		2019/09/23	13:05	G	8	1	1	1		1	1	1	1									
GH_MW-ERSC-1_WG_2019-07-01_NP	GH_MW-ERSC-1	WG		2019/09/23	14:30	G	8	1	1	1		1	1	1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	9/24 9:00

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X		
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

110



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 25-SEP-19  
Report Date: 04-OCT-19 16:59 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2354019  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-07  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-1 GH_MW-RLP-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 24-SEP-19 @ 09:30							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-SEP-19	R4850247
Total Kjeldahl Nitrogen	0.080		0.050	mg/L		27-SEP-19	R4849356
Mercury (Hg)-Total	0.00095		0.00050	ug/L		01-OCT-19	R4851495
Total Organic Carbon	0.60		0.50	mg/L		29-SEP-19	R4850247
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-SEP-19	27-SEP-19	R4844376
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4845712
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-SEP-19	28-SEP-19	R4849556
Dissolved Mercury Filtration Location	FIELD					28-SEP-19	R4849604
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4845712
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-SEP-19	27-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00119		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Barium (Ba)-Dissolved	0.0429		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Boron (B)-Dissolved	0.014		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-SEP-19	27-SEP-19	R4844376
Calcium (Ca)-Dissolved	59.5		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-SEP-19	27-SEP-19	R4844376
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Iron (Fe)-Dissolved	0.519		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Lithium (Li)-Dissolved	0.0067		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
Magnesium (Mg)-Dissolved	30.3		0.10	mg/L	26-SEP-19	27-SEP-19	R4844376
Manganese (Mn)-Dissolved	0.0865		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Molybdenum (Mo)-Dissolved	0.00349		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Potassium (K)-Dissolved	1.12		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-SEP-19	27-SEP-19	R4844376
Silicon (Si)-Dissolved	4.58		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Sodium (Na)-Dissolved	3.15		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.195		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Uranium (U)-Dissolved	0.000993		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
<b>Hardness</b>							
Hardness (as CaCO3)	273		0.50	mg/L		30-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.023		0.020	ug/L		27-SEP-19	R4848770
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.618		0.0030	mg/L		28-SEP-19	R4850436
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-1 GH_MW-RLP-1D_WG_2019-07-01_NP							
Sampled By: CLIENT on 24-SEP-19 @ 09:30							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00149		0.00010	mg/L		27-SEP-19	R4848770
Barium (Ba)-Total	0.0495		0.00010	mg/L		27-SEP-19	R4848770
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4848770
Boron (B)-Total	0.017		0.010	mg/L		27-SEP-19	R4848770
Cadmium (Cd)-Total	0.0202		0.0050	ug/L		27-SEP-19	R4848770
Calcium (Ca)-Total	58.2		0.050	mg/L		27-SEP-19	R4848770
Chromium (Cr)-Total	0.00099		0.00010	mg/L		27-SEP-19	R4848770
Cobalt (Co)-Total	0.24		0.10	ug/L		27-SEP-19	R4848770
Copper (Cu)-Total	0.00102		0.00050	mg/L		27-SEP-19	R4848770
Iron (Fe)-Total	1.06		0.010	mg/L		27-SEP-19	R4848770
Lead (Pb)-Total	0.000257		0.000050	mg/L		27-SEP-19	R4848770
Lithium (Li)-Total	0.0071		0.0010	mg/L		27-SEP-19	R4848770
Magnesium (Mg)-Total	29.1		0.10	mg/L		27-SEP-19	R4848770
Manganese (Mn)-Total	0.101		0.00010	mg/L		27-SEP-19	R4848770
Molybdenum (Mo)-Total	0.00327		0.000050	mg/L		27-SEP-19	R4848770
Nickel (Ni)-Total	0.00132		0.00050	mg/L		27-SEP-19	R4848770
Potassium (K)-Total	1.43		0.050	mg/L		27-SEP-19	R4848770
Selenium (Se)-Total	<0.050		0.050	ug/L		27-SEP-19	R4848770
Silicon (Si)-Total	6.09		0.10	mg/L		27-SEP-19	R4848770
Silver (Ag)-Total	0.000098		0.000010	mg/L		28-SEP-19	R4850436
Sodium (Na)-Total	3.24		0.050	mg/L		27-SEP-19	R4848770
Strontium (Sr)-Total	0.182		0.00020	mg/L		27-SEP-19	R4848770
Thallium (Tl)-Total	0.000019		0.000010	mg/L		27-SEP-19	R4848770
Tin (Sn)-Total	0.00018		0.00010	mg/L		27-SEP-19	R4848770
Titanium (Ti)-Total	0.021		0.010	mg/L		27-SEP-19	R4848770
Uranium (U)-Total	0.00109		0.000010	mg/L		27-SEP-19	R4848770
Vanadium (V)-Total	0.00197		0.00050	mg/L		27-SEP-19	R4848770
Zinc (Zn)-Total	0.0243		0.0030	mg/L		27-SEP-19	R4848770
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.3		1.0	mg/L		26-SEP-19	R4848998
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	232		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Total (as CaCO3)	232		1.0	mg/L		26-SEP-19	R4848984
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0412		0.0050	mg/L		28-SEP-19	R4849985
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-SEP-19	R4843733
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		25-SEP-19	R4843733
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	488		2.0	uS/cm		26-SEP-19	R4848984
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.75		0.020	mg/L		25-SEP-19	R4843733
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.3			%		30-SEP-19	
Anion Sum	5.62			meq/L		30-SEP-19	
Cation Sum	5.66			meq/L		30-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		30-SEP-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-1 GH_MW-RLP-1D_WG_2019-07-01_NP Sampled By: CLIENT on 24-SEP-19 @ 09:30 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4843733
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4843733
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		25-SEP-19	R4841429
<b>Oxidation redution potential by elect.</b> ORP	193		-1000	mV		26-SEP-19	R4847909
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0172		0.0020	mg/L		27-SEP-19	R4849345
<b>Sulfate in Water by IC</b> Sulfate (SO4)	42.7		0.30	mg/L		25-SEP-19	R4843733
<b>Total Dissolved Solids</b> Total Dissolved Solids	254	DLHC	20	mg/L		27-SEP-19	R4849824
<b>Total Suspended Solids</b> Total Suspended Solids	19.4		1.0	mg/L		27-SEP-19	R4849777
<b>Turbidity</b> Turbidity	31.4		0.10	NTU		26-SEP-19	R4846888
<b>pH</b> pH	8.17		0.10	pH		26-SEP-19	R4848984
L2354019-2 GH_GWB3_WG_2019-07-01_NP Sampled By: CLIENT on 24-SEP-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Hardness (as CaCO3)	<0.50		0.50	mg/L		27-SEP-19	
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-SEP-19	R4849356
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		28-SEP-19	R4849840
Total Organic Carbon	<0.50		0.50	mg/L		29-SEP-19	R4850247
<b>Total Metals in Water</b> <b>Total Be (Low) in Water by CRC ICPMS</b> Beryllium (Be)-Total	<0.020		0.020	ug/L		27-SEP-19	R4848770
<b>Total Metals in Water by CRC ICPMS</b> Aluminum (Al)-Total	<0.0030		0.0030	mg/L		27-SEP-19	R4848770
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Arsenic (As)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Barium (Ba)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4848770
Boron (B)-Total	<0.010		0.010	mg/L		27-SEP-19	R4848770
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		27-SEP-19	R4848770
Calcium (Ca)-Total	<0.050		0.050	mg/L		27-SEP-19	R4848770
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Cobalt (Co)-Total	<0.10		0.10	ug/L		27-SEP-19	R4848770
Copper (Cu)-Total	<0.00050		0.00050	mg/L		27-SEP-19	R4848770
Iron (Fe)-Total	<0.010		0.010	mg/L		27-SEP-19	R4848770
Lead (Pb)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4848770
Lithium (Li)-Total	<0.0010		0.0010	mg/L		27-SEP-19	R4848770
Magnesium (Mg)-Total	<0.10		0.10	mg/L		27-SEP-19	R4848770
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4848770
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		27-SEP-19	R4848770
Potassium (K)-Total	<0.050		0.050	mg/L		27-SEP-19	R4848770
Selenium (Se)-Total	<0.050		0.050	ug/L		27-SEP-19	R4848770

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-2 GH_GWB3_WG_2019-07-01_NP							
Sampled By: CLIENT on 24-SEP-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Silicon (Si)-Total	<0.10		0.10	mg/L		27-SEP-19	R4848770
Silver (Ag)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4848770
Sodium (Na)-Total	<0.050		0.050	mg/L		27-SEP-19	R4848770
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		27-SEP-19	R4848770
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4848770
Tin (Sn)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Titanium (Ti)-Total	<0.010		0.010	mg/L		27-SEP-19	R4848770
Uranium (U)-Total	<0.000010		0.000010	mg/L		27-SEP-19	R4848770
Vanadium (V)-Total	<0.00050		0.00050	mg/L		27-SEP-19	R4848770
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		27-SEP-19	R4848770
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.8		1.0	mg/L		26-SEP-19	R4848998
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0160	RRV	0.0050	mg/L		28-SEP-19	R4849985
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-SEP-19	R4843733
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		25-SEP-19	R4843733
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					26-SEP-19	R4844949
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L		26-SEP-19	R4845148
Magnesium (Mg)-Dissolved	<0.0050		0.0050	mg/L		26-SEP-19	R4845148
Potassium (K)-Dissolved	<0.050		0.050	mg/L		26-SEP-19	R4845148
Sodium (Na)-Dissolved	<0.050		0.050	mg/L		26-SEP-19	R4845148
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-SEP-19	R4848984
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		25-SEP-19	R4843733
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		27-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		27-SEP-19	
Anion Sum	<0.10			meq/L		27-SEP-19	
Cation Sum	<0.10			meq/L		27-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4843733
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4843733
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0016	HTD	0.0010	mg/L		30-SEP-19	R4841429
<b>Oxidation redution potential by elect.</b>							
ORP	432		-1000	mV		26-SEP-19	R4847909
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020	RRV	0.0020	mg/L		27-SEP-19	R4849345
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		25-SEP-19	R4843733

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-2 GH_GWB3_WG_2019-07-01_NP Sampled By: CLIENT on 24-SEP-19 @ 12:00 Matrix: WG							
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		27-SEP-19	R4849824
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-SEP-19	R4849777
<b>Turbidity</b>							
Turbidity	0.26		0.10	NTU		26-SEP-19	R4846888
<b>pH</b>							
pH	5.44		0.10	pH		26-SEP-19	R4848984
L2354019-3 GH_GWD3_WG_2019-07-01_NP Sampled By: CLIENT on 24-SEP-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-SEP-19	R4850247
Total Kjeldahl Nitrogen	0.070		0.050	mg/L		29-SEP-19	R4849356
Mercury (Hg)-Total	0.00131		0.00050	ug/L		28-SEP-19	R4849840
Total Organic Carbon	1.16		0.50	mg/L		29-SEP-19	R4850247
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-SEP-19	27-SEP-19	R4844376
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4845712
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-SEP-19	28-SEP-19	R4849556
Dissolved Mercury Filtration Location	FIELD					28-SEP-19	R4849604
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-SEP-19	R4845712
Aluminum (Al)-Dissolved	0.0037		0.0030	mg/L	26-SEP-19	27-SEP-19	R4844376
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Arsenic (As)-Dissolved	0.00128		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Barium (Ba)-Dissolved	0.0436		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Boron (B)-Dissolved	0.014		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-SEP-19	27-SEP-19	R4844376
Calcium (Ca)-Dissolved	58.3		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-SEP-19	27-SEP-19	R4844376
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Iron (Fe)-Dissolved	0.522		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Lithium (Li)-Dissolved	0.0065		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
Magnesium (Mg)-Dissolved	30.2		0.10	mg/L	26-SEP-19	27-SEP-19	R4844376
Manganese (Mn)-Dissolved	0.0883		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Molybdenum (Mo)-Dissolved	0.00363		0.000050	mg/L	26-SEP-19	27-SEP-19	R4844376
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Potassium (K)-Dissolved	1.15		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-SEP-19	27-SEP-19	R4844376
Silicon (Si)-Dissolved	4.60		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Sodium (Na)-Dissolved	3.19		0.050	mg/L	26-SEP-19	27-SEP-19	R4844376
Strontium (Sr)-Dissolved	0.202		0.00020	mg/L	26-SEP-19	27-SEP-19	R4844376
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-SEP-19	27-SEP-19	R4844376
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-SEP-19	27-SEP-19	R4844376

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-3 GH_GWD3_WG_2019-07-01_NP							
Sampled By: CLIENT on 24-SEP-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Uranium (U)-Dissolved	0.000968		0.000010	mg/L	26-SEP-19	27-SEP-19	R4844376
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-SEP-19	27-SEP-19	R4844376
Zinc (Zn)-Dissolved	0.0011		0.0010	mg/L	26-SEP-19	27-SEP-19	R4844376
<b>Hardness</b>							
Hardness (as CaCO3)	270		0.50	mg/L		28-SEP-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.033		0.020	ug/L		27-SEP-19	R4848770
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	1.07		0.0030	mg/L		27-SEP-19	R4848770
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		27-SEP-19	R4848770
Arsenic (As)-Total	0.00167		0.00010	mg/L		27-SEP-19	R4848770
Barium (Ba)-Total	0.0518		0.00010	mg/L		27-SEP-19	R4848770
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		27-SEP-19	R4848770
Boron (B)-Total	0.018		0.010	mg/L		27-SEP-19	R4848770
Cadmium (Cd)-Total	0.0261		0.0050	ug/L		27-SEP-19	R4848770
Calcium (Ca)-Total	58.5		0.050	mg/L		27-SEP-19	R4848770
Chromium (Cr)-Total	0.00132		0.00010	mg/L		27-SEP-19	R4848770
Cobalt (Co)-Total	0.25		0.10	ug/L		27-SEP-19	R4848770
Copper (Cu)-Total	0.00076		0.00050	mg/L		27-SEP-19	R4848770
Iron (Fe)-Total	1.14		0.010	mg/L		27-SEP-19	R4848770
Lead (Pb)-Total	0.000287		0.000050	mg/L		27-SEP-19	R4848770
Lithium (Li)-Total	0.0073		0.0010	mg/L		27-SEP-19	R4848770
Magnesium (Mg)-Total	30.5		0.10	mg/L		27-SEP-19	R4848770
Manganese (Mn)-Total	0.104		0.00010	mg/L		27-SEP-19	R4848770
Molybdenum (Mo)-Total	0.00323		0.000050	mg/L		27-SEP-19	R4848770
Nickel (Ni)-Total	0.00128		0.00050	mg/L		27-SEP-19	R4848770
Potassium (K)-Total	1.60		0.050	mg/L		27-SEP-19	R4848770
Selenium (Se)-Total	<0.050		0.050	ug/L		27-SEP-19	R4848770
Silicon (Si)-Total	6.68		0.10	mg/L		27-SEP-19	R4848770
Silver (Ag)-Total	0.000033		0.000010	mg/L		27-SEP-19	R4848770
Sodium (Na)-Total	3.45		0.050	mg/L		27-SEP-19	R4848770
Strontium (Sr)-Total	0.181		0.00020	mg/L		27-SEP-19	R4848770
Thallium (Tl)-Total	0.000021		0.000010	mg/L		27-SEP-19	R4848770
Tin (Sn)-Total	0.00012		0.00010	mg/L		27-SEP-19	R4848770
Titanium (Ti)-Total	<0.010		0.010	mg/L		28-SEP-19	R4849767
Uranium (U)-Total	0.00113		0.000010	mg/L		27-SEP-19	R4848770
Vanadium (V)-Total	0.00281		0.00050	mg/L		27-SEP-19	R4848770
Zinc (Zn)-Total	0.0271		0.0030	mg/L		27-SEP-19	R4848770
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.6		1.0	mg/L		26-SEP-19	R4848998
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	233		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-SEP-19	R4848984
Alkalinity, Total (as CaCO3)	233		1.0	mg/L		26-SEP-19	R4848984
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0519		0.0050	mg/L		28-SEP-19	R4849985
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-SEP-19	R4843733
<b>Chloride in Water by IC</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2354019-3 GH_GWD3_WG_2019-07-01_NP							
Sampled By: CLIENT on 24-SEP-19 @ 12:00							
Matrix: WG							
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		25-SEP-19	R4843733
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	485		2.0	uS/cm		26-SEP-19	R4848984
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.87		0.020	mg/L		25-SEP-19	R4843733
<b>Ion Balance Calculation</b>							
Ion Balance	99.4		-100	%		28-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.3			%		28-SEP-19	
Anion Sum	5.63			meq/L		28-SEP-19	
Cation Sum	5.60			meq/L		28-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		25-SEP-19	R4843733
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-SEP-19	R4843733
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		25-SEP-19	R4841429
<b>Oxidation redution potential by elect.</b>							
ORP	355		-1000	mV		26-SEP-19	R4847909
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0191		0.0020	mg/L		27-SEP-19	R4849345
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	42.4		0.30	mg/L		25-SEP-19	R4843733
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	244	DLHC	20	mg/L		27-SEP-19	R4849824
<b>Total Suspended Solids</b>							
Total Suspended Solids	21.2		1.0	mg/L		27-SEP-19	R4849777
<b>Turbidity</b>							
Turbidity	34.5		0.10	NTU		26-SEP-19	R4846888
<b>pH</b>							
pH	8.17		0.10	pH		26-SEP-19	R4848984

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	L2354019 -2 D-MET (cations) SUBSAMPLED/FILTERED/PRESERVED AT THE LAB - Sample was Filtered and Preserved at the laboratory

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-CL	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-CL	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			

## Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

GHO\_QTR\_GW\_2019-07

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 1 of 19

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848998</b>							
<b>WG3174781-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.0		%		85-115	26-SEP-19
<b>WG3174781-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.0		%		85-115	26-SEP-19
<b>WG3174781-10</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-SEP-19
<b>WG3174781-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	26-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848984</b>							
<b>WG3174792-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	26-SEP-19
<b>WG3174792-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4844376</b>							
<b>WG3174120-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.7		%		80-120	27-SEP-19
<b>WG3174120-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-SEP-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848770</b>							
<b>WG3174043-3</b>	<b>DUP</b>	<b>L2354019-1</b>						
Beryllium (Be)-Total		0.000023	0.000028	J	mg/L	0.000005	0.00004	27-SEP-19
<b>WG3174043-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			97.9		%		80-120	27-SEP-19
<b>WG3174043-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-SEP-19
<b>WG3174043-4</b>	<b>MS</b>	<b>L2354019-3</b>						
Beryllium (Be)-Total			96.9		%		70-130	27-SEP-19
<b>Batch</b>	<b>R4849767</b>							
<b>WG3175718-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			94.1		%		80-120	28-SEP-19
<b>WG3175718-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 2 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-11</b>	<b>DUP</b>	<b>L2354019-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-SEP-19
<b>WG3173708-10</b>	<b>LCS</b>							
Bromide (Br)			104.0		%		85-115	25-SEP-19
<b>WG3173708-6</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	25-SEP-19
<b>WG3173708-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Bromide (Br)			114.0		%		75-125	25-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4850247</b>							
<b>WG3176684-3</b>	<b>DUP</b>	<b>L2354019-3</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	29-SEP-19
<b>WG3176684-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.2		%		80-120	29-SEP-19
<b>WG3176684-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.9		%		80-120	29-SEP-19
<b>WG3176684-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-SEP-19
<b>WG3176684-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4850247</b>							
<b>WG3176684-3</b>	<b>DUP</b>	<b>L2354019-3</b>						
Total Organic Carbon		1.16	0.90	J	mg/L	0.27	1	29-SEP-19
<b>WG3176684-2</b>	<b>LCS</b>							
Total Organic Carbon			108.7		%		80-120	29-SEP-19
<b>WG3176684-6</b>	<b>LCS</b>							
Total Organic Carbon			107.1		%		80-120	29-SEP-19
<b>WG3176684-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-SEP-19
<b>WG3176684-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-SEP-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 3 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-11</b>	<b>DUP</b>	<b>L2354019-1</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	25-SEP-19
<b>WG3173708-10</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		90-110	25-SEP-19
<b>WG3173708-6</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		90-110	25-SEP-19
<b>WG3173708-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Chloride (Cl)			110.5		%		75-125	25-SEP-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4848984</b>							
<b>WG3174792-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	26-SEP-19
<b>WG3174792-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-SEP-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-11</b>	<b>DUP</b>	<b>L2354019-1</b>						
Fluoride (F)		1.75	1.75		mg/L	0.1	20	25-SEP-19
<b>WG3173708-10</b>	<b>LCS</b>							
Fluoride (F)			104.1		%		90-110	25-SEP-19
<b>WG3173708-6</b>	<b>LCS</b>							
Fluoride (F)			106.4		%		90-110	25-SEP-19
<b>WG3173708-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Fluoride (F)			N/A	MS-B	%		-	25-SEP-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849556</b>							
<b>WG3175849-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.1		%		80-120	28-SEP-19
<b>WG3175849-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 4 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849840</b>							
<b>WG3176103-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			95.8		%		80-120	28-SEP-19
<b>WG3176103-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	28-SEP-19
<b>Batch</b>	<b>R4851495</b>							
<b>WG3178257-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			115.4		%		80-120	01-OCT-19
<b>WG3178257-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	01-OCT-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4845148</b>							
<b>WG3174018-2</b>	<b>LCS</b>	<b>TMRM</b>						
Calcium (Ca)-Dissolved			92.6		%		80-120	26-SEP-19
Magnesium (Mg)-Dissolved			107.3		%		80-120	26-SEP-19
Potassium (K)-Dissolved			98.6		%		80-120	26-SEP-19
Sodium (Na)-Dissolved			99.1		%		80-120	26-SEP-19
<b>WG3174018-1</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-SEP-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4844376</b>							
<b>WG3174120-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.6		%		80-120	27-SEP-19
Antimony (Sb)-Dissolved			101.4		%		80-120	27-SEP-19
Arsenic (As)-Dissolved			97.3		%		80-120	27-SEP-19
Barium (Ba)-Dissolved			99.9		%		80-120	27-SEP-19
Bismuth (Bi)-Dissolved			100.2		%		80-120	27-SEP-19
Boron (B)-Dissolved			97.3		%		80-120	27-SEP-19
Cadmium (Cd)-Dissolved			92.0		%		80-120	27-SEP-19
Calcium (Ca)-Dissolved			95.9		%		80-120	27-SEP-19
Chromium (Cr)-Dissolved			102.2		%		80-120	27-SEP-19
Cobalt (Co)-Dissolved			99.7		%		80-120	27-SEP-19
Copper (Cu)-Dissolved			95.4		%		80-120	27-SEP-19
Iron (Fe)-Dissolved			99.4		%		80-120	27-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 5 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4844376</b>							
<b>WG3174120-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			97.5		%		80-120	27-SEP-19
Lithium (Li)-Dissolved			97.4		%		80-120	27-SEP-19
Magnesium (Mg)-Dissolved			100.0		%		80-120	27-SEP-19
Manganese (Mn)-Dissolved			101.8		%		80-120	27-SEP-19
Molybdenum (Mo)-Dissolved			104.6		%		80-120	27-SEP-19
Nickel (Ni)-Dissolved			98.7		%		80-120	27-SEP-19
Potassium (K)-Dissolved			99.9		%		80-120	27-SEP-19
Selenium (Se)-Dissolved			100.2		%		80-120	27-SEP-19
Silicon (Si)-Dissolved			96.8		%		60-140	27-SEP-19
Silver (Ag)-Dissolved			103.5		%		80-120	27-SEP-19
Sodium (Na)-Dissolved			101.6		%		80-120	27-SEP-19
Strontium (Sr)-Dissolved			103.5		%		80-120	27-SEP-19
Thallium (Tl)-Dissolved			94.5		%		80-120	27-SEP-19
Tin (Sn)-Dissolved			90.4		%		80-120	27-SEP-19
Titanium (Ti)-Dissolved			101.3		%		80-120	27-SEP-19
Uranium (U)-Dissolved			95.6		%		80-120	27-SEP-19
Vanadium (V)-Dissolved			101.2		%		80-120	27-SEP-19
Zinc (Zn)-Dissolved			94.5		%		80-120	27-SEP-19
<b>WG3174120-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 6 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4844376</b>							
<b>WG3174120-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-SEP-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848770</b>							
<b>WG3174043-3</b>	<b>DUP</b>	<b>L2354019-1</b>						
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-SEP-19
Arsenic (As)-Total		0.00149	0.00159		mg/L	6.5	20	27-SEP-19
Barium (Ba)-Total		0.0495	0.0505		mg/L	1.9	20	27-SEP-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Boron (B)-Total		0.017	0.018		mg/L	5.4	20	27-SEP-19
Cadmium (Cd)-Total		0.0000202	0.0000238		mg/L	17	20	27-SEP-19
Calcium (Ca)-Total		58.2	59.3		mg/L	1.9	20	27-SEP-19
Chromium (Cr)-Total		0.00099	0.00119		mg/L	19	20	27-SEP-19
Cobalt (Co)-Total		0.00024	0.00026		mg/L	5.8	20	27-SEP-19
Copper (Cu)-Total		0.00102	0.00113		mg/L	10	20	27-SEP-19
Iron (Fe)-Total		1.06	1.14		mg/L	7.8	20	27-SEP-19
Lead (Pb)-Total		0.000257	0.000274		mg/L	6.5	20	27-SEP-19
Lithium (Li)-Total		0.0071	0.0075		mg/L	5.6	20	27-SEP-19
Magnesium (Mg)-Total		29.1	29.4		mg/L	1.3	20	27-SEP-19
Manganese (Mn)-Total		0.101	0.0993		mg/L	2.1	20	27-SEP-19
Molybdenum (Mo)-Total		0.00327	0.00337		mg/L	2.9	20	27-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 7 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848770</b>							
<b>WG3174043-3</b>	<b>DUP</b>	<b>L2354019-1</b>						
Nickel (Ni)-Total		0.00132	0.00149		mg/L	12	20	27-SEP-19
Potassium (K)-Total		1.43	1.51		mg/L	5.6	20	27-SEP-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-SEP-19
Silicon (Si)-Total		6.09	6.27		mg/L	2.8	20	27-SEP-19
Sodium (Na)-Total		3.24	3.30		mg/L	2.0	20	27-SEP-19
Strontium (Sr)-Total		0.182	0.188		mg/L	3.5	20	27-SEP-19
Thallium (Tl)-Total		0.000019	0.000020		mg/L	3.1	20	27-SEP-19
Tin (Sn)-Total		0.00018	0.00019		mg/L	5.4	20	27-SEP-19
Titanium (Ti)-Total		0.021	0.026	J	mg/L	0.005	0.02	27-SEP-19
Uranium (U)-Total		0.00109	0.00111		mg/L	2.0	20	27-SEP-19
Vanadium (V)-Total		0.00197	0.00237		mg/L	18	20	27-SEP-19
Zinc (Zn)-Total		0.0243	0.0252		mg/L	3.7	20	27-SEP-19
<b>WG3174043-2</b>								
	<b>LCS</b>							
Aluminum (Al)-Total			106.5		%		80-120	27-SEP-19
Antimony (Sb)-Total			97.7		%		80-120	27-SEP-19
Arsenic (As)-Total			97.9		%		80-120	27-SEP-19
Barium (Ba)-Total			100.8		%		80-120	27-SEP-19
Bismuth (Bi)-Total			98.4		%		80-120	27-SEP-19
Boron (B)-Total			97.7		%		80-120	27-SEP-19
Cadmium (Cd)-Total			97.9		%		80-120	27-SEP-19
Calcium (Ca)-Total			99.4		%		80-120	27-SEP-19
Chromium (Cr)-Total			99.8		%		80-120	27-SEP-19
Cobalt (Co)-Total			99.4		%		80-120	27-SEP-19
Copper (Cu)-Total			98.2		%		80-120	27-SEP-19
Iron (Fe)-Total			102.5		%		80-120	27-SEP-19
Lead (Pb)-Total			96.9		%		80-120	27-SEP-19
Lithium (Li)-Total			97.0		%		80-120	27-SEP-19
Magnesium (Mg)-Total			101.6		%		80-120	27-SEP-19
Manganese (Mn)-Total			100.0		%		80-120	27-SEP-19
Molybdenum (Mo)-Total			97.6		%		80-120	27-SEP-19
Nickel (Ni)-Total			99.8		%		80-120	27-SEP-19
Potassium (K)-Total			103.2		%		80-120	27-SEP-19
Selenium (Se)-Total			98.1		%		80-120	27-SEP-19
Silicon (Si)-Total			96.9		%		80-120	27-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 8 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4848770</b>							
<b>WG3174043-2</b>	<b>LCS</b>							
Silver (Ag)-Total			95.8		%		80-120	27-SEP-19
Sodium (Na)-Total			102.3		%		80-120	27-SEP-19
Strontium (Sr)-Total			101.2		%		80-120	27-SEP-19
Thallium (Tl)-Total			99.2		%		80-120	27-SEP-19
Tin (Sn)-Total			97.4		%		80-120	27-SEP-19
Titanium (Ti)-Total			101.5		%		80-120	27-SEP-19
Uranium (U)-Total			100.2		%		80-120	27-SEP-19
Vanadium (V)-Total			101.2		%		80-120	27-SEP-19
Zinc (Zn)-Total			98.7		%		80-120	27-SEP-19
<b>WG3174043-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	27-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 9 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4848770</b>							
<b>WG3174043-1 MB</b>								
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-SEP-19
<b>WG3174043-4 MS</b>		<b>L2354019-3</b>						
Aluminum (Al)-Total			N/A	MS-B	%		-	27-SEP-19
Antimony (Sb)-Total			99.2		%		70-130	27-SEP-19
Arsenic (As)-Total			100.4		%		70-130	27-SEP-19
Barium (Ba)-Total			N/A	MS-B	%		-	27-SEP-19
Bismuth (Bi)-Total			99.9		%		70-130	27-SEP-19
Boron (B)-Total			99.7		%		70-130	27-SEP-19
Cadmium (Cd)-Total			100.9		%		70-130	27-SEP-19
Calcium (Ca)-Total			N/A	MS-B	%		-	27-SEP-19
Chromium (Cr)-Total			100.1		%		70-130	27-SEP-19
Cobalt (Co)-Total			98.4		%		70-130	27-SEP-19
Copper (Cu)-Total			97.3		%		70-130	27-SEP-19
Iron (Fe)-Total			100.4		%		70-130	27-SEP-19
Lead (Pb)-Total			96.6		%		70-130	27-SEP-19
Lithium (Li)-Total			93.8		%		70-130	27-SEP-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	27-SEP-19
Manganese (Mn)-Total			N/A	MS-B	%		-	27-SEP-19
Molybdenum (Mo)-Total			99.7		%		70-130	27-SEP-19
Nickel (Ni)-Total			98.7		%		70-130	27-SEP-19
Potassium (K)-Total			100.2		%		70-130	27-SEP-19
Selenium (Se)-Total			100.1		%		70-130	27-SEP-19
Silicon (Si)-Total			88.9		%		70-130	27-SEP-19
Silver (Ag)-Total			104.7		%		70-130	27-SEP-19
Sodium (Na)-Total			N/A	MS-B	%		-	27-SEP-19
Strontium (Sr)-Total			N/A	MS-B	%		-	27-SEP-19
Thallium (Tl)-Total			98.6		%		70-130	27-SEP-19
Tin (Sn)-Total			101.8		%		70-130	27-SEP-19
Uranium (U)-Total			105.7		%		70-130	27-SEP-19







## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 11 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4849767</b>							
<b>WG3175718-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	28-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-SEP-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-SEP-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-SEP-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-SEP-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-SEP-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-SEP-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-SEP-19
<b>Batch</b>	<b>R4850436</b>							
<b>WG3175295-3</b>	<b>DUP</b>	<b>L2354019-1</b>						
Aluminum (Al)-Total		0.618	0.626		mg/L	1.3	20	28-SEP-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	28-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 12 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4850436</b>							
<b>WG3175295-3</b>	<b>DUP</b>	<b>L2354019-1</b>						
Arsenic (As)-Total		0.00149	0.00163		mg/L	0.0	20	28-SEP-19
Barium (Ba)-Total		0.0495	0.0514		mg/L	0.6	20	28-SEP-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	28-SEP-19
Boron (B)-Total		0.017	0.016		mg/L	3.6	20	28-SEP-19
Calcium (Ca)-Total		58.2	59.3		mg/L	0.8	20	28-SEP-19
Chromium (Cr)-Total		0.00099	0.00103		mg/L	1.9	20	28-SEP-19
Cobalt (Co)-Total		0.00024	0.00025		mg/L	7.0	20	28-SEP-19
Iron (Fe)-Total		1.06	1.14		mg/L	2.2	20	28-SEP-19
Lead (Pb)-Total		0.000257	0.000292		mg/L	2.6	20	28-SEP-19
Lithium (Li)-Total		0.0071	0.0073		mg/L	1.4	20	28-SEP-19
Magnesium (Mg)-Total		29.1	29.3		mg/L	1.8	20	28-SEP-19
Manganese (Mn)-Total		0.101	0.100		mg/L	1.8	20	28-SEP-19
Molybdenum (Mo)-Total		0.00327	0.00347		mg/L	1.4	20	28-SEP-19
Nickel (Ni)-Total		0.00132	0.00157		mg/L	2.9	20	28-SEP-19
Potassium (K)-Total		1.43	1.35		mg/L	0.3	20	28-SEP-19
Silicon (Si)-Total		6.09	5.83		mg/L	0.9	20	28-SEP-19
Silver (Ag)-Total		0.000098	0.000460	DUP-H	mg/L	130	20	28-SEP-19
Sodium (Na)-Total		3.24	3.26		mg/L	0.6	20	28-SEP-19
Strontium (Sr)-Total		0.182	0.183		mg/L	2.5	20	28-SEP-19
Thallium (Tl)-Total		0.000019	0.000021		mg/L	12	20	28-SEP-19
Titanium (Ti)-Total		0.021	0.012		mg/L	0.8	20	28-SEP-19
Uranium (U)-Total		0.00109	0.00112		mg/L	3.4	20	28-SEP-19
Vanadium (V)-Total		0.00197	0.00228		mg/L	3.9	20	28-SEP-19
Zinc (Zn)-Total		0.0243	0.0249		mg/L	1.1	20	28-SEP-19
<b>WG3175295-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			99.5		%		80-120	28-SEP-19
Antimony (Sb)-Total			99.9		%		80-120	28-SEP-19
Arsenic (As)-Total			97.9		%		80-120	28-SEP-19
Barium (Ba)-Total			103.8		%		80-120	28-SEP-19
Bismuth (Bi)-Total			104.4		%		80-120	28-SEP-19
Boron (B)-Total			91.2		%		80-120	28-SEP-19
Cadmium (Cd)-Total			98.4		%		80-120	28-SEP-19
Calcium (Ca)-Total			98.3		%		80-120	28-SEP-19
Chromium (Cr)-Total			98.1		%		80-120	28-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 13 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4850436</b>							
<b>WG3175295-2</b>	<b>LCS</b>							
Cobalt (Co)-Total			100.7		%		80-120	28-SEP-19
Copper (Cu)-Total			98.8		%		80-120	28-SEP-19
Iron (Fe)-Total			95.3		%		80-120	28-SEP-19
Lead (Pb)-Total			101.5		%		80-120	28-SEP-19
Lithium (Li)-Total			96.2		%		80-120	28-SEP-19
Magnesium (Mg)-Total			97.9		%		80-120	28-SEP-19
Manganese (Mn)-Total			101.0		%		80-120	28-SEP-19
Molybdenum (Mo)-Total			98.6		%		80-120	28-SEP-19
Nickel (Ni)-Total			101.5		%		80-120	28-SEP-19
Potassium (K)-Total			97.4		%		80-120	28-SEP-19
Selenium (Se)-Total			101.4		%		80-120	28-SEP-19
Silicon (Si)-Total			99.3		%		80-120	28-SEP-19
Silver (Ag)-Total			97.2		%		80-120	28-SEP-19
Sodium (Na)-Total			102.3		%		80-120	28-SEP-19
Strontium (Sr)-Total			96.3		%		80-120	28-SEP-19
Thallium (Tl)-Total			99.3		%		80-120	28-SEP-19
Tin (Sn)-Total			96.4		%		80-120	28-SEP-19
Titanium (Ti)-Total			98.0		%		80-120	28-SEP-19
Uranium (U)-Total			102.7		%		80-120	28-SEP-19
Vanadium (V)-Total			100.1		%		80-120	28-SEP-19
Zinc (Zn)-Total			97.1		%		80-120	28-SEP-19
<b>WG3175295-1</b>		<b>MB</b>						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	28-SEP-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	28-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-SEP-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-SEP-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-SEP-19





## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 15 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Nitrite (as N)			112.6		%		75-125	25-SEP-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-11</b>	<b>DUP</b>	<b>L2354019-1</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	25-SEP-19
<b>WG3173708-10</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	25-SEP-19
<b>WG3173708-6</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	25-SEP-19
<b>WG3173708-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Nitrate (as N)			111.0		%		75-125	25-SEP-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4847909</b>							
<b>WG3174434-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	26-SEP-19
<b>WG3174434-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	26-SEP-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849345</b>							
<b>WG3175189-30</b>	<b>LCS</b>							
Phosphorus (P)-Total			117.8		%		80-120	27-SEP-19
<b>WG3175189-29</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	27-SEP-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4848984</b>							
<b>WG3174792-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	26-SEP-19
<b>Water</b>								



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 16 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4841429</b>							
<b>WG3172619-19</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.3		%		80-120	25-SEP-19
<b>WG3172619-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.3		%		80-120	25-SEP-19
<b>WG3172619-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-SEP-19
<b>WG3172619-6</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	25-SEP-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4843733</b>							
<b>WG3173708-11</b>	<b>DUP</b>	<b>L2354019-1</b>						
Sulfate (SO4)		42.7	42.7		mg/L	0.0	20	25-SEP-19
<b>WG3173708-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.9		%		90-110	25-SEP-19
<b>WG3173708-6</b>	<b>LCS</b>							
Sulfate (SO4)			102.2		%		90-110	25-SEP-19
<b>WG3173708-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-SEP-19
<b>WG3173708-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-SEP-19
<b>WG3173708-12</b>	<b>MS</b>	<b>L2354019-1</b>						
Sulfate (SO4)			108.0		%		75-125	25-SEP-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849824</b>							
<b>WG3174771-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.5		%		85-115	27-SEP-19
<b>WG3174771-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-SEP-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4849356</b>							
<b>WG3175153-15</b>	<b>DUP</b>	<b>L2354019-3</b>						
Total Kjeldahl Nitrogen		0.070	0.066		mg/L	4.9	20	29-SEP-19
<b>WG3175153-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.6		%		75-125	27-SEP-19
<b>WG3175153-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-SEP-19
<b>WG3175153-16</b>	<b>MS</b>	<b>L2354019-3</b>						
Total Kjeldahl Nitrogen			103.1		%		70-130	29-SEP-19



## Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 17 of 19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4849777</b>							
<b>WG3174328-16</b>	<b>LCS</b>							
Total Suspended Solids			96.3		%		85-115	27-SEP-19
<b>WG3174328-18</b>	<b>LCS</b>							
Total Suspended Solids			93.9		%		85-115	27-SEP-19
<b>WG3174328-15</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-SEP-19
<b>WG3174328-17</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-SEP-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4846888</b>							
<b>WG3174419-6</b>	<b>DUP</b>	<b>L2354019-3</b>						
Turbidity		34.5	33.9		NTU	1.8	15	26-SEP-19
<b>WG3174419-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	26-SEP-19
<b>WG3174419-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	26-SEP-19

# Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 18 of 19

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2354019

Report Date: 04-OCT-19

Page 19 of 19

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	24-SEP-19 09:30	26-SEP-19 14:45	0.25	53	hours	EHTR-FM
	2	24-SEP-19 12:00	26-SEP-19 14:45	0.25	51	hours	EHTR-FM
	3	24-SEP-19 12:00	26-SEP-19 14:45	0.25	51	hours	EHTR-FM
pH							
	1	24-SEP-19 09:30	26-SEP-19 13:00	0.25	52	hours	EHTR-FM
	2	24-SEP-19 12:00	26-SEP-19 13:00	0.25	49	hours	EHTR-FM
	3	24-SEP-19 12:00	26-SEP-19 13:00	0.25	49	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	2	24-SEP-19 12:00	30-SEP-19 13:56	3	6	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).


Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2354019 were received on 25-SEP-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>GHO_QTR_GW_2019-07-01</b>		TURNAROUND TIME:				RUSH:				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>		
Facility Name / Job# Greenhills Operation				Lab Name ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager Jenni Kropp				Lab Contact Lyudmyla Shvets		Email 1: Leigh.Stickney		X	X	X
Email jennifer.kropp@teck.com				Email Lyudmyla.Shvets@ALSGlobal.com		Email 2: jennifer.kropp@teck.com		X	X	X
Address P.O. BOX 5000				Address 2559 29 Street NE		Email 3: teckcoal@equisonline.com				X
City Elkford Province BC				City Calgary Province AB		Email 4: jaydon.francis@teck.com		X	X	X
Postal Code V0B1H0 Country Canada				Postal Code T1Y 7B5 Country Canada		Email 5: Brendan.Peachey@teck.com		X	X	X
Phone Number 250-865-3048				Phone Number 403 407 1794		Email 6: DL-Equis-GHO-feild@teck.com		X	X	X
						PO number 1510013				

SAMPLE DETAILS							ANALYSIS REQUESTED								Filtered: Field, Lab, Field & Lab, None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N	N							
 <p>L2354019-COFC</p>																						
GH_MW-RLP-ID_WG_2019-07-01_NP	GH_MW-RLP-ID	WG		2019/09/24	9:30	G	7	1	1	1		1	1	1	1							
GH_GWB3_WG_2019-07-01_NP	GH_GWB3	WG		2019/09/24		G	4		1				1	1	1							
GH_GWD3_WG_2019-07-01_NP	GH_GWD3	WG		2019/09/24		G	7	1	1	1		1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS			RELINQUISHED BY/AFFILIATION			DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
								DK		9/25 0850	

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

602



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 20-AUG-19  
Report Date: 21-NOV-19 18:19 (MT)  
Version: FINAL REV. 3

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2332287  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Comments: 21-NOV-2019 - Sample IDs and Location Codes corrected for MC10-series.

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

21-NOV-19 18:19 (MT)

Version: FINAL REV. 3

Sample ID Description Sampled Date Sampled Time Client ID	L2332287-1 WATER 19-AUG-19 15:30 GH_MW-MC- 1S_WG_2019_08_ 19_NP	L2332287-2 WATER 19-AUG-19 11:45 GH_MW-MC- 2S_WG_2019_08_ 19_NP	L2332287-3 WATER 19-AUG-19 14:00 GH_MW-MC- 2D_WG_2019_08_ 19_NP	L2332287-4 WATER 19-AUG-19 12:00 GH_MW_MC10- A_WG_2019_08_1 9_NP	L2332287-5 WATER 19-AUG-19 12:40 GH_MW_MC10- B_WG_2019_08_1 9_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	294	623	2030	623	<2.0
	Hardness (as CaCO3) (mg/L)	146	284	17.3	285	
	pH (pH)	8.16	8.22	9.11	8.20	5.49
	ORP (mV)	234	320	188	244	440
	Total Suspended Solids (mg/L)	<1.0	<1.0	12.1	<1.0	<1.0
	Total Dissolved Solids (mg/L)	164 <sup>DLHC</sup>	379 <sup>DLHC</sup>	1210 <sup>DLHC</sup>	392 <sup>DLHC</sup>	<10
	Turbidity (NTU)	0.14	0.41	18.4	0.58	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.0	7.5	<1.0	8.4	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	148	261	513	259	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	116	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	148	261	629 <sup>DLHC</sup>	259	<1.0
	Ammonia as N (mg/L)	<0.0050	0.0064	0.79 <sup>DLHC</sup>	<0.0050	<0.0050
	Bicarbonate (HCO3) (mg/L)	180	319	626 <sup>DLHC</sup>	316	<5.0
	Bromide (Br) (mg/L)	<0.050	<0.050	0.76 <sup>DLHC</sup>	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	69.5 <sup>DLHC</sup>	<5.0	<5.0
	Chloride (Cl) (mg/L)	<0.50	1.97	259 <sup>DLHC</sup>	2.03	<0.50
	Fluoride (F) (mg/L)	0.185	0.151	3.07 <sup>DLHC</sup>	0.152	<0.020
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	89.4	91.1	101	91.8	
	Nitrate and Nitrite (as N) (mg/L)	0.0633	0.247	<0.025 <sup>DLHC</sup>	0.246	<0.0051
	Nitrate (as N) (mg/L)	0.0621	0.247	<0.025 <sup>DLHC</sup>	0.246	<0.0050
	Nitrite (as N) (mg/L)	0.0012	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.083	<1.0 <sup>DLM</sup>	0.060	<0.050
	Total Nitrogen (mg/L)	0.063	0.331	<1.0 <sup>DLM</sup>	0.306	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0010	0.0066 <sup>DLM</sup>	0.44 <sup>DLHC</sup>	0.0074 <sup>DLM</sup>	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	0.012	0.478 <sup>DLHC</sup>	0.011	<0.0020
	Sulfate (SO4) (mg/L)	16.5	88.7	11.6	89.1	<0.30
	Anion Sum (meq/L)	3.31	7.15	20.3	7.11	
	Cation Sum (meq/L)	2.96	6.51	20.4	6.53	
	Cation - Anion Balance (%)	-5.6	-4.7	0.4 <sup>DTC</sup>	-4.3	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	2.47	4.26 <sup>DTC</sup>	2.51	
	Total Organic Carbon (mg/L)	<0.50	2.41	2.99 <sup>DTC</sup>	2.23	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0011	0.0026	0.0350 <sup>DLDS</sup>	0.0029	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2332287-6 WATER 19-AUG-19 13:00 GH_MW_MC10- D_WG_2019_08_1 9_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm) Hardness (as CaCO3) (mg/L) pH (pH) ORP (mV) Total Suspended Solids (mg/L) Total Dissolved Solids (mg/L) Turbidity (NTU)	<0.50			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)  Alkalinity, Bicarbonate (as CaCO3) (mg/L) Alkalinity, Carbonate (as CaCO3) (mg/L) Alkalinity, Hydroxide (as CaCO3) (mg/L) Alkalinity, Total (as CaCO3) (mg/L) Ammonia as N (mg/L) Bicarbonate (HCO3) (mg/L) Bromide (Br) (mg/L) Carbonate (CO3) (mg/L) Chloride (Cl) (mg/L) Fluoride (F) (mg/L) Hydroxide (OH) (mg/L) Ion Balance (%) Nitrate and Nitrite (as N) (mg/L) Nitrate (as N) (mg/L) Nitrite (as N) (mg/L) Total Kjeldahl Nitrogen (mg/L) Total Nitrogen (mg/L) Orthophosphate-Dissolved (as P) (mg/L) Phosphorus (P)-Total (mg/L) Sulfate (SO4) (mg/L) Anion Sum (meq/L) Cation Sum (meq/L) Cation - Anion Balance (%)				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L) Total Organic Carbon (mg/L)	2.04			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L)	FIELD FIELD <0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

21-NOV-19 18:19 (MT)

Version: FINAL REV. 3

Sample ID Description Sampled Date Sampled Time Client ID	L2332287-1 WATER 19-AUG-19 15:30 GH_MW-MC- 1S_WG_2019_08_19_NP	L2332287-2 WATER 19-AUG-19 11:45 GH_MW-MC- 2S_WG_2019_08_19_NP	L2332287-3 WATER 19-AUG-19 14:00 GH_MW-MC- 2D_WG_2019_08_19_NP	L2332287-4 WATER 19-AUG-19 12:00 GH_MW_MC10- A_WG_2019_08_19_NP	L2332287-5 WATER 19-AUG-19 12:40 GH_MW_MC10- B_WG_2019_08_19_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00013	0.00073 <sup>DLDS</sup>	0.00013
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00022	0.0153 <sup>DLDS</sup>	0.00024
	Barium (Ba)-Dissolved (mg/L)	0.0487	0.105	0.0637 <sup>DLDS</sup>	0.104
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.025	0.704 <sup>DLDS</sup>	0.027
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000331	<0.000025 <sup>DLDS</sup>	0.0000314
	Calcium (Ca)-Dissolved (mg/L)	42.2	72.9	3.01 <sup>DLDS</sup>	73.0
	Chromium (Cr)-Dissolved (mg/L)	0.00027	0.00014	<0.00050 <sup>DLDS</sup>	0.00015
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00038	<0.0010 <sup>DLDS</sup>	0.00039
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.050 <sup>DLDS</sup>	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0020	0.0230	0.999 <sup>DLDS</sup>	0.0236
	Magnesium (Mg)-Dissolved (mg/L)	9.92	24.8	2.36 <sup>DLDS</sup>	24.8
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0169	0.0311 <sup>DLDS</sup>	0.0174
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00114	0.00126	0.00171 <sup>DLDS</sup>	0.00127
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00090	<0.0025 <sup>DLDS</sup>	0.00091
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.38 <sup>DLDS</sup>	<0.050
	Potassium (K)-Dissolved (mg/L)	0.39	1.22	1.79 <sup>DLDS</sup>	1.20
	Selenium (Se)-Dissolved (mg/L)	0.000687	0.00242	0.00980 <sup>DLDS</sup>	0.00275
	Silicon (Si)-Dissolved (mg/L)	1.90	3.80	3.47 <sup>DLDS</sup>	3.85
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.690	18.4	461 <sup>DLDS</sup>	18.6
	Strontium (Sr)-Dissolved (mg/L)	0.199	0.262	0.167 <sup>DLDS</sup>	0.266
	Sulfur (S)-Dissolved (mg/L)	5.59	31.0	194 <sup>DLDS</sup>	31.9
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000016	<0.000050 <sup>DLDS</sup>	0.000014
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000645	0.00114	0.000967 <sup>DLDS</sup>	0.00115
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	0.00067 <sup>DLDS</sup>	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>			
	L2332287-6 WATER 19-AUG-19 13:00 GH_MW_MC10- D_WG_2019_08_1 9_NP			
Grouping	Analyte			
<b>WATER</b>				
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	<0.00010		
	Barium (Ba)-Dissolved (mg/L)	<0.00010		
	Beryllium (Be)-Dissolved (mg/L)	<0.000020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050		
	Calcium (Ca)-Dissolved (mg/L)	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010		
	Cobalt (Co)-Dissolved (mg/L)	<0.00010		
	Copper (Cu)-Dissolved (mg/L)	<0.00020		
	Iron (Fe)-Dissolved (mg/L)	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050		
	Potassium (K)-Dissolved (mg/L)	<0.10		
	Selenium (Se)-Dissolved (mg/L)	<0.000050		
	Silicon (Si)-Dissolved (mg/L)	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	<0.00020		
	Sulfur (S)-Dissolved (mg/L)	<0.50		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030		
	Uranium (U)-Dissolved (mg/L)	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B



## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-CL**            Water            Dissolved Mercury in Water by CVAAS            APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

**IONBALANCE-BC-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-CL**            Water            Dissolved Metals in Water by CRC ICPMS            APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**            Water            Total Nitrogen (Calculation)            APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**N2N3-CALC-CL**            Water            Nitrate+Nitrite            CALCULATION

**NH3-L-F-CL**            Water            Ammonia, Total (as N)            J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**            Water            Nitrite in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**            Water            Nitrate in Water by IC (Low Level)            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL**            Water            Hydroxide in Water            APHA 2320 B-Potentiometric Titration

**ORP-CL**            Water            Oxidation reduction potential by elect.            ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**            Water            Phosphorus (P)-Total            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**            Water            pH            APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**    Water            Orthophosphate-Dissolved (as P)            APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**            Water            Sulfate in Water by IC            EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763736</b>							
<b>WG3140066-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.7		%		85-115	21-AUG-19
<b>WG3140066-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	21-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763718</b>							
<b>WG3140072-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.7		%		85-115	21-AUG-19
<b>WG3140072-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768147</b>							
<b>WG3140397-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			100.1		%		80-120	21-AUG-19
<b>WG3140397-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	21-AUG-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763718</b>							
<b>WG3140072-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	21-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763112</b>							
<b>WG3140112-2</b>	<b>LCS</b>							
Bromide (Br)			106.8		%		85-115	21-AUG-19
<b>WG3140112-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	21-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767322</b>							
<b>WG3141597-15</b>	<b>DUP</b>	<b>L2332287-2</b>						
Dissolved Organic Carbon		2.47	2.50		mg/L	1.1	20	22-AUG-19
<b>WG3141597-14</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.3		%		80-120	22-AUG-19
<b>WG3141597-18</b>	<b>LCS</b>							
Dissolved Organic Carbon			109.9		%		80-120	22-AUG-19
<b>WG3141597-13</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-AUG-19



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767322</b>							
<b>WG3141597-17 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141597-16 MS</b>		<b>L2332287-1</b>						
Dissolved Organic Carbon			101.4		%		70-130	22-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767322</b>							
<b>WG3141597-15 DUP</b>		<b>L2332287-2</b>						
Total Organic Carbon		2.41	2.24		mg/L	7.0	20	22-AUG-19
<b>WG3141597-14 LCS</b>								
Total Organic Carbon			108.3		%		80-120	22-AUG-19
<b>WG3141597-18 LCS</b>								
Total Organic Carbon			116.5		%		80-120	22-AUG-19
<b>WG3141597-13 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141597-17 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141597-16 MS</b>		<b>L2332287-1</b>						
Total Organic Carbon			104.1		%		70-130	22-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763112</b>							
<b>WG3140112-2 LCS</b>								
Chloride (Cl)			102.7		%		90-110	21-AUG-19
<b>WG3140112-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	21-AUG-19
<b>CO3-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763718</b>							
<b>WG3140072-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	21-AUG-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763718</b>							
<b>WG3140072-14 LCS</b>								
Conductivity (@ 25C)			102.7		%		90-110	21-AUG-19
<b>WG3140072-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	21-AUG-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4763112</b>							
<b>WG3140112-2</b>	<b>LCS</b>							
Fluoride (F)			107.0		%		90-110	21-AUG-19
<b>WG3140112-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-AUG-19
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767663</b>							
<b>WG3142122-7</b>	<b>DUP</b>	<b>L2332287-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3142122-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			108.0		%		80-120	23-AUG-19
<b>WG3142122-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	23-AUG-19
<b>WG3142122-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
<b>WG3142122-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
<b>WG3142122-8</b>	<b>MS</b>	<b>L2332287-2</b>						
Mercury (Hg)-Dissolved			92.1		%		70-130	23-AUG-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768147</b>							
<b>WG3140397-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			100.5		%		80-120	21-AUG-19
Antimony (Sb)-Dissolved			99.98		%		80-120	21-AUG-19
Arsenic (As)-Dissolved			98.7		%		80-120	21-AUG-19
Barium (Ba)-Dissolved			97.7		%		80-120	21-AUG-19
Bismuth (Bi)-Dissolved			99.7		%		80-120	21-AUG-19
Boron (B)-Dissolved			85.6		%		80-120	21-AUG-19
Cadmium (Cd)-Dissolved			93.9		%		80-120	21-AUG-19
Calcium (Ca)-Dissolved			99.9		%		80-120	21-AUG-19
Chromium (Cr)-Dissolved			100.6		%		80-120	21-AUG-19
Cobalt (Co)-Dissolved			97.5		%		80-120	21-AUG-19
Copper (Cu)-Dissolved			96.9		%		80-120	21-AUG-19
Iron (Fe)-Dissolved			101.6		%		80-120	21-AUG-19
Lead (Pb)-Dissolved			100.7		%		80-120	21-AUG-19
Lithium (Li)-Dissolved			97.2		%		80-120	21-AUG-19
Magnesium (Mg)-Dissolved			100.8		%		80-120	21-AUG-19
Manganese (Mn)-Dissolved			99.0		%		80-120	21-AUG-19



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768147</b>							
<b>WG3140397-2</b>	<b>LCS</b>	<b>TMRM</b>						
Molybdenum (Mo)-Dissolved			99.7		%		80-120	21-AUG-19
Nickel (Ni)-Dissolved			100.5		%		80-120	21-AUG-19
Phosphorus (P)-Dissolved			102.8		%		70-130	21-AUG-19
Potassium (K)-Dissolved			100.5		%		80-120	21-AUG-19
Selenium (Se)-Dissolved			98.2		%		80-120	21-AUG-19
Silicon (Si)-Dissolved			104.0		%		60-140	21-AUG-19
Silver (Ag)-Dissolved			99.2		%		80-120	21-AUG-19
Sodium (Na)-Dissolved			105.2		%		80-120	21-AUG-19
Strontium (Sr)-Dissolved			103.4		%		80-120	21-AUG-19
Sulfur (S)-Dissolved			103.2		%		80-120	21-AUG-19
Thallium (Tl)-Dissolved			100.2		%		80-120	21-AUG-19
Tin (Sn)-Dissolved			97.0		%		80-120	21-AUG-19
Titanium (Ti)-Dissolved			94.0		%		80-120	21-AUG-19
Uranium (U)-Dissolved			100.3		%		80-120	21-AUG-19
Vanadium (V)-Dissolved			99.1		%		80-120	21-AUG-19
Zinc (Zn)-Dissolved			95.6		%		80-120	21-AUG-19
Zirconium (Zr)-Dissolved			102.6		%		80-120	21-AUG-19
<b>WG3140397-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	21-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	21-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	21-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	21-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	21-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	21-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	21-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	21-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	21-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	21-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4768147</b>							
<b>WG3140397-1</b>	<b>MB</b>							
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	21-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	21-AUG-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	21-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	21-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	21-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	21-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	21-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	21-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	21-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	21-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	21-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	21-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	21-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	21-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	21-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	21-AUG-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	21-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4768758</b>							
<b>WG3141851-14</b>	<b>LCS</b>							
Ammonia as N			104.0		%		85-115	23-AUG-19
<b>WG3141851-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	23-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4763112</b>							
<b>WG3140112-2</b>	<b>LCS</b>							
Nitrite (as N)			105.1		%		90-110	21-AUG-19
<b>WG3140112-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	21-AUG-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4763112</b>							
<b>WG3140112-2</b>	<b>LCS</b>							
Nitrate (as N)			102.8		%		90-110	21-AUG-19
<b>WG3140112-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	21-AUG-19



## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R4763718							
<b>WG3140072-13 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	21-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4768422							
<b>WG3143171-1 CRM</b>		<b>CL-ORP</b>						
ORP			220		mV		210-230	24-AUG-19
<b>WG3143171-3 CRM</b>		<b>CL-ORP</b>						
ORP			224		mV		210-230	24-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4767467							
<b>WG3141919-4 LCS</b>								
Phosphorus (P)-Total			118.6		%		80-120	23-AUG-19
<b>WG3141919-3 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4763718							
<b>WG3140072-14 LCS</b>								
pH			7.01		pH		6.9-7.1	21-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4759717							
<b>WG3137802-16 DUP</b>		<b>L2332287-5</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-AUG-19
<b>WG3137802-15 LCS</b>								
Orthophosphate-Dissolved (as P)			104.2		%		80-120	20-AUG-19
<b>WG3137802-4 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4763112							
<b>WG3140112-2 LCS</b>								
Sulfate (SO4)			102.9		%		90-110	21-AUG-19
<b>WG3140112-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	21-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4768900							
<b>WG3141391-11</b>	<b>LCS</b>							
Total Dissolved Solids			96.6		%		85-115	23-AUG-19
<b>WG3141391-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-AUG-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4768755							
<b>WG3143573-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.7		%		75-125	26-AUG-19
<b>WG3143573-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	26-AUG-19
<b>WG3143573-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.3		%		75-125	26-AUG-19
<b>WG3143573-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.2		%		75-125	26-AUG-19
<b>WG3143573-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4768742							
<b>WG3140730-10</b>	<b>LCS</b>							
Total Suspended Solids			97.4		%		85-115	23-AUG-19
<b>WG3140730-8</b>	<b>LCS</b>							
Total Suspended Solids			95.7		%		85-115	23-AUG-19
<b>WG3140730-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-AUG-19
<b>WG3140730-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	23-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4763094							
<b>WG3139691-9</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	21-AUG-19
<b>WG3139691-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-AUG-19

# Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2332287

Report Date: 21-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	19-AUG-19 15:30	24-AUG-19 10:00	0.25	114	hours	EHTR-FM
	2	19-AUG-19 11:45	24-AUG-19 10:00	0.25	118	hours	EHTR-FM
	3	19-AUG-19 14:00	24-AUG-19 10:00	0.25	116	hours	EHTR-FM
	4	19-AUG-19 12:00	24-AUG-19 10:00	0.25	118	hours	EHTR-FM
	5	19-AUG-19 12:40	24-AUG-19 10:00	0.25	117	hours	EHTR-FM
pH							
	1	19-AUG-19 15:30	21-AUG-19 09:00	0.25	42	hours	EHTR-FM
	2	19-AUG-19 11:45	21-AUG-19 09:00	0.25	45	hours	EHTR-FM
	3	19-AUG-19 14:00	21-AUG-19 09:00	0.25	43	hours	EHTR-FM
	4	19-AUG-19 12:00	21-AUG-19 09:00	0.25	45	hours	EHTR-FM
	5	19-AUG-19 12:40	21-AUG-19 09:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2332287 were received on 20-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company: SNC-Lavalin ~Nelson			Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact: Katrina Cheung			Quality Control (QC) Report with Report <input type="checkbox"/> <input type="checkbox"/> NO			PRIORITY (Business Days) 4 day [P4-20%] <input type="checkbox"/>			EMERGENCY 1 Business day [E1 - 100%] <input type="checkbox"/>											
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576			Compare Results to Criteria on Report - provide details below if box			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all E&P TATs:														
Street: 520 Lake Street			Emails: SNC - 'Katrina.Cheung'			For tests that can not be performed according to the service level selected, you will be contacted.														
City/Province: Nelson, BC			'Genevieve.Pomerleau', Vicky.Lipinski@snclavalin.com			<b>Analysis Request</b>														
Postal Code: V1L 4C6			Teck - 'Cam.Jaeger', Jenny.Hutchison@teck.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution			F/P P F/P														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																	
Company:			Emails: Katrina.Cheung@snclavalin.com																	
Contact:			payables@snclavalin.com																	
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>																	
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center: PO#																	
Job #: 658004			Major/Minor Code: Routing Code:																	
PO / AFE: 658004			Requisitioner:																	
LSD:			Location:																	
ALS Lab Work Order # (lab use only):			ALS Contact: Ryan Smyth 403-407-1795			Sampler: B. Hansen AM/TC														
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met. +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrates + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonates (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	GH_MW-MC-1S_WG_2019_0819NP		GH_MW-MC-1S		19-AUG-19	15:30	Water	R	R	R	R	R	R	R	R	R	R			5
	<del>GH_MW-MC-1D_WG_2019_0819NP</del>		<del>GH_MW-MC-1D</del>		<del>19-AUG-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	GH_MW-MC-2S_WG_2019_0819NP		GH_MW-MC-2S		19-AUG-19	11:45	Water	R	R	R	R	R	R	R	R	R	R			5
	GH_MW-MC-2D_WG_2019_0819NP		GH_MW-MC-2D		19-AUG-19	14:00	Water	R	R	R	R	R	R	R	R	R	R			5
	<del>GH_MW-Willow-1S_WG_2019_0819NP</del>		<del>GH_MW-Willow-1S</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Willow-1D_WG_2019_0819NP</del>		<del>GH_MW-Willow-1D</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Willow-2S_WG_2019_0819NP</del>		<del>GH_MW-Willow-2S</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Willow-2D_WG_2019_0819NP</del>		<del>GH_MW-Willow-2D</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Willow-3S_WG_2019_0819NP</del>		<del>GH_MW-Willow-3S</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Willow-3D_WG_2019_0819NP</del>		<del>GH_MW-Willow-3D</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Well-1S_WG_2019_0819NP</del>		<del>GH_MW-Well-1S</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
	<del>GH_MW-Well-1D_WG_2019_0819NP</del>		<del>GH_MW-Well-1D</del>		<del>19-AUG-19</del>	<del>14:00</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>			<del>5</del>
<b>Drinking Water (DW) Samples (client use)</b>			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>														
Are samples taken from a Regulated DW System? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes			PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/ use? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes			Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
			OHG-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input checked="" type="checkbox"/>														
						INITIAL COOLER TEMPERATURES °C: 20 FINAL COOLER TEMPERATURES °C:														
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>														
Released by: <i>[Signature]</i>	Date: 19/08/19	Time: 16:00	Received by: <i>[Signature]</i>	Date: 19/08/19	Time: 09:00	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2332287-COFC

Number: 19 -

Page 2 of 2

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>														
Company: SNC-Lavalin ~Nelson			Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EOD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply														
Contact: Katrina Cheung			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			<b>PROPERTY</b> (Business Days)			<b>EMERGENCY</b>											
Phone: Tel. 604-515-5151 x 129 Cell.: 778-990-6576			Compare Results to Criteria on Report - provide details below if box			4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>											
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>											
Street: 520 Lake Street			Emails: SNC - 'Katrina.Cheung'			Date and Time Required for all E&P TATs:														
City/Province: Nelson, BC			'Genevieve.Pomerleau', Vicky.Lipinski@sncfavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.														
Postal Code: V1L 4C6			Teck - "Cam.Jaeger", Jenny.Hutchison@teck.com			<b>Analysis Request</b>														
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution			Indicate Filled (F), Preserved (P) or Filled and Preserved (F/P) below														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P														
Company:			Emails: Katrina.Cheung@sncfavalin.com			DOX (C-DIS-ORG-LOW-CL)														
Contact:			payables@sncfavalin.com			TOC (C-TOT-ORG-LOW-CL)														
<b>Project Information</b>			<b>Oil and Gas Required Fields (client use)</b>			BCM DG D-Met +Hg (MET-D-BCMDG-CL)														
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)														
Job #: 658004			Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (NZN3-CALC-CL)														
PO / AFE: 658004			Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)														
LSD:			Location:			TKN (TKN-L-F-CL)														
ALS Lab Work Order # (lab use only):			ALS Contact: Ryan Smyth 403-407-1795			Bicarbonate (BIC-CL)														
			Sampler: B. Hansen AM/IC			Carbonate (CO3-CL)														
						Hydroxide (OH-CL)														
						Teck Routine (TECKCOAL-ROUTINE-CL)*														
						*Remove CL-CATIONS-D-CMS (REP) #														
						*Remove MET-D-CMS-CL #														
						*Remove IONBALANCE-BC-CL + #														
						*Remove TECKCOAL-IONBAL-CL														
						SAMPLES ON HOLD														
						Sample is hazardous (please provide further details)														
						NUMBER OF CONTAINERS														
<b>ALS Sample # (lab use only)</b>			<b>Sample Identification &amp;/or Coordinates</b>			<b>Teck Sample Location (sys_loc_code)</b>			<b>Date</b>			<b>Time</b>			<b>Sample Type</b>					
(lab use only)			(This description will appear on the report)			(For Teck data upload to EQUIS database)			(dd-mmm-yy)			(hh:mm)								
<del>GH_MW-Wof-25_WG_2019_0 NP</del>			<del>GH_MW-Wof-25</del>			<del>GH_MW-Wof-25</del>			<del></del>			<del></del>			<del>Water</del>			<del>R R R R R R R R R R</del>		
<del>GH_MW-Wof-2D_WG_2019_0 NP</del>			<del>GH_MW-Wof-2D</del>			<del>GH_MW-Wof-2D</del>			<del></del>			<del></del>			<del>Water</del>			<del>R R R R R R R R R R</del>		
GH_MW_MC10-A_WG_2019_08_19 NP			GH_MW_MC10-A			19-AUG-19 12:00			Water			R R R R R R R R R R			R R R R R R R R R R			5		
<del>GH_MW_MC10-A_WG_2019_0 NP</del>			<del>GH_MW_MC10-A</del>			<del></del>			<del>Water</del>			<del>R R R R R R R R R R</del>			<del>R R R R R R R R R R</del>			<del></del>		
GH_MW_MC10-B_WG_2019_08_19 NP			GH_MW_MC10-B			19-AUG-19 12:40			Water			R R R R R R R R R R			R R R R R R R R R R			2		
<del>GH_MW_MC10-C_WG_2019_0 NP</del>			<del>GH_MW_MC10-C</del>			<del></del>			<del>Water</del>			<del>R R R R R R R R R R</del>			<del>R R R R R R R R R R</del>			<del></del>		
GH_MW_MC10-D_WG_2019_08_19 NP			GH_MW_MC10-D			19-AUG-19 13:00			Water			R R R R R R R R R R			R R R R R R R R R R			3		
									Water											
									Water											
									Water											
									Water											
									Water											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>														
Are samples taken from a Regulated DW System? <input type="checkbox"/>			PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>														
Are samples for human consumption/ use? <input type="checkbox"/>			Teck Facility Name: (please select the applicable Facility)			Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>														
			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input checked="" type="checkbox"/>														
						INITIAL COOLER TEMPERATURES °C														
						FINAL COOLER TEMPERATURES °C														
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>														
Released by: [Signature]			Received by: [Signature]			Received by: [Signature]														
Date: 19/08/19			Date: 8/20 0900			Date: [Blank]														
Time: 16:00			Time: [Blank]			Time: [Blank]														



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 21-AUG-19  
Report Date: 27-AUG-19 15:40 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2333917

Project P.O. #: 658004

Job Reference: 658004

C of C Numbers:

Legal Site Desc:



Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2333917-1 WATER 20-AUG-19 09:15 GH_MW-MC- 1D_WG_2019_08_ 20_NP	L2333917-2 WATER 20-AUG-19 12:20 GH_MW-WILLOW- 1D_WG_2019_08_ 20_NP	L2333917-3 WATER 20-AUG-19 11:15 GH_MW-WILLOW- 2S_WG_2019_08_ 20_NP	L2333917-4 WATER 20-AUG-19 14:30 GH_MW-WILLOW- 2D_WG_2019_08_ 20_NP	L2333917-5 WATER 20-AUG-19 15:50 GH_MW-WILLOW- 3S_WG_2019_08_ 20_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	385	450	370	585	448
	Hardness (as CaCO3) (mg/L)	137	156	202	159	265
	pH (pH)	8.20	8.24	8.19	8.24	8.17
	ORP (mV)	308	434	432	430	326
	Total Suspended Solids (mg/L)	<1.0	30.5	1.3	7.3	15.0
	Total Dissolved Solids (mg/L)	222 <sup>DLHC</sup>	264 <sup>DLHC</sup>	215 <sup>DLHC</sup>	347 <sup>DLHC</sup>	261 <sup>DLHC</sup>
	Turbidity (NTU)	0.68	43.3	2.83	11.0	15.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.9	3.0	5.8	2.5	8.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	187	243	196	320	237
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	187	243	196	320	237
	Ammonia as N (mg/L)	0.0344	0.0926	0.0058	0.155	<0.0050
	Bicarbonate (HCO3) (mg/L)	228	296	239	390	289
	Bromide (Br) (mg/L)	0.121	0.061	<0.050	0.074	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	15.8	7.34	<0.50	10.1	<0.50
	Fluoride (F) (mg/L)	0.754	0.885	0.146	0.888	0.121
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	110	107	100	109	108
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051	0.0771	0.0248	0.0826
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0771	0.0234	0.0826
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0014	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.189	0.147	0.334	0.085
	Total Nitrogen (mg/L)	<0.050	0.189	0.224	0.359	0.168
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0038	0.0092	0.0065	0.0051
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0687	0.0114	0.0566	0.0125
	Sulfate (SO4) (mg/L)	1.48	9.89	17.8	5.55	16.1
	Anion Sum (meq/L)	4.24	5.31	4.30	6.84	5.09
	Cation Sum (meq/L)	4.65	5.66	4.30	7.44	5.50
	Cation - Anion Balance (%)	4.6	3.2	0.0	4.2	3.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.79	3.30	2.01	1.74
	Total Organic Carbon (mg/L)	<0.50	1.44	3.80	2.09	2.20
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0043	0.0035	0.0029	0.0020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2333917-1 WATER 20-AUG-19 09:15 GH_MW-MC- 1D_WG_2019_08_ 20_NP	L2333917-2 WATER 20-AUG-19 12:20 GH_MW-WILLOW- 1D_WG_2019_08_ 20_NP	L2333917-3 WATER 20-AUG-19 11:15 GH_MW-WILLOW- 2S_WG_2019_08_ 20_NP	L2333917-4 WATER 20-AUG-19 14:30 GH_MW-WILLOW- 2D_WG_2019_08_ 20_NP	L2333917-5 WATER 20-AUG-19 15:50 GH_MW-WILLOW- 3S_WG_2019_08_ 20_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>					
Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	0.00016	<0.00010
Arsenic (As)-Dissolved (mg/L)	0.00071	0.00051	0.00026	0.00077	0.00014
Barium (Ba)-Dissolved (mg/L)	0.816	1.48	0.162	0.663	0.211
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	0.081	0.150	0.015	0.220	0.012
Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	0.000157	0.000279	0.000201
Calcium (Ca)-Dissolved (mg/L)	30.8	34.1	53.7	37.0	69.7
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00013	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	0.00014	<0.00010
Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00040	0.00033	0.00027
Iron (Fe)-Dissolved (mg/L)	0.068	0.338	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	0.0801	0.0856	0.0114	0.175	0.0076
Magnesium (Mg)-Dissolved (mg/L)	14.7	17.1	16.5	16.2	22.1
Manganese (Mn)-Dissolved (mg/L)	0.126	0.0735	0.00014	0.0178	0.00156
Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00645	0.00597	0.000858	0.00416	0.000636
Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00062	<0.00050	0.00167	<0.00050
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	1.36	1.05	1.12	2.02	0.90
Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	0.000940	0.000301	0.00106
Silicon (Si)-Dissolved (mg/L)	3.27	3.26	3.00	3.64	4.15
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	42.9	57.5	5.38	96.7	4.11
Strontium (Sr)-Dissolved (mg/L)	0.417	0.675	0.130	0.346	0.143
Sulfur (S)-Dissolved (mg/L)	<0.50	3.60	6.15	1.98	5.85
Thallium (Tl)-Dissolved (mg/L)	0.000026	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000060	0.000246	0.000371	0.000686	0.000397
Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00054	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0012	0.0040	<0.0010	0.0017	0.0395
Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 1 of 13

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768538</b>							
<b>WG3143216-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	23-AUG-19
<b>WG3143216-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.4		%		85-115	23-AUG-19
<b>WG3143216-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>WG3143216-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Alkalinity, Total (as CaCO3)		187	193		mg/L	3.3	20	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.7		%		80-120	23-AUG-19
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.7		%		80-120	23-AUG-19
<b>WG3141725-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-19
<b>WG3141725-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Bicarbonate (HCO3)		228	235		mg/L	3.3	20	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Bromide (Br)		0.121	0.119		mg/L	2.0	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-10</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Bromide (Br)			114.3		%		75-125	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-3</b>	<b>DUP</b>	<b>L2333917-4</b>						
Dissolved Organic Carbon		2.01	1.88		mg/L	6.5	20	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.0		%		80-120	25-AUG-19
<b>WG3143147-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.8		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-4</b>	<b>MS</b>	<b>L2333917-5</b>						
Dissolved Organic Carbon			100.2		%		70-130	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-3</b>	<b>DUP</b>	<b>L2333917-4</b>						
Total Organic Carbon		2.09	1.87		mg/L	11	20	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Total Organic Carbon			109.4		%		80-120	25-AUG-19
<b>WG3143147-6</b>	<b>LCS</b>							
Total Organic Carbon			105.8		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-4</b>	<b>MS</b>	<b>L2333917-5</b>						
Total Organic Carbon			102.3		%		70-130	25-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Chloride (Cl)		15.8	15.8		mg/L	0.2	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Chloride (Cl)			113.7		%		75-125	22-AUG-19
<b>CO3-CL</b>								
<b>Batch R4768557</b>								
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	23-AUG-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4768557</b>								
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Conductivity (@ 25C)		385	385		uS/cm	0.0	10	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.4		%		90-110	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Fluoride (F)		0.754	0.747		mg/L	0.9	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Fluoride (F)			113.4		%		75-125	22-AUG-19
<b>HG-D-CVAA-CL</b>								
<b>Batch R4767663</b>								
<b>WG3142122-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.4		%		80-120	23-AUG-19
<b>WG3142122-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767663</b>							
<b>WG3142122-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	23-AUG-19
<b>WG3142122-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-AUG-19
<b>WG3142122-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-AUG-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			95.1		%		80-120	23-AUG-19
Antimony (Sb)-Dissolved			102.6		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			100.0		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			88.5		%		80-120	23-AUG-19
Bismuth (Bi)-Dissolved			92.4		%		80-120	23-AUG-19
Boron (B)-Dissolved			90.5		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	23-AUG-19
Calcium (Ca)-Dissolved			96.2		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			92.5		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			90.3		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			88.8		%		80-120	23-AUG-19
Iron (Fe)-Dissolved			92.6		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			92.5		%		80-120	23-AUG-19
Lithium (Li)-Dissolved			100.7		%		80-120	23-AUG-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	23-AUG-19
Manganese (Mn)-Dissolved			92.6		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			104.5		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			90.7		%		80-120	23-AUG-19
Phosphorus (P)-Dissolved			105.3		%		70-130	23-AUG-19
Potassium (K)-Dissolved			99.3		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			100.3		%		80-120	23-AUG-19
Silicon (Si)-Dissolved			103.8		%		60-140	23-AUG-19
Silver (Ag)-Dissolved			94.9		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			94.1		%		80-120	23-AUG-19
Strontium (Sr)-Dissolved			93.9		%		80-120	23-AUG-19
Sulfur (S)-Dissolved			97.3		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			91.3		%		80-120	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			105.7		%		80-120	23-AUG-19
Titanium (Ti)-Dissolved			97.3		%		80-120	23-AUG-19
Uranium (U)-Dissolved			81.4		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			92.6		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			90.0		%		80-120	23-AUG-19
Zirconium (Zr)-Dissolved			104.0		%		80-120	23-AUG-19
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			92.6		%		80-120	23-AUG-19
Antimony (Sb)-Dissolved			104.6		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			98.4		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			88.7		%		80-120	23-AUG-19
Bismuth (Bi)-Dissolved			92.7		%		80-120	23-AUG-19
Boron (B)-Dissolved			83.6		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			95.5		%		80-120	23-AUG-19
Calcium (Ca)-Dissolved			91.6		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			92.8		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			91.1		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			90.1		%		80-120	23-AUG-19
Iron (Fe)-Dissolved			92.9		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			94.1		%		80-120	23-AUG-19
Lithium (Li)-Dissolved			99.0		%		80-120	23-AUG-19
Magnesium (Mg)-Dissolved			95.0		%		80-120	23-AUG-19
Manganese (Mn)-Dissolved			90.5		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			101.1		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			90.5		%		80-120	23-AUG-19
Phosphorus (P)-Dissolved			103.1		%		70-130	23-AUG-19
Potassium (K)-Dissolved			98.6		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			100.3		%		80-120	23-AUG-19
Silicon (Si)-Dissolved			100.8		%		60-140	23-AUG-19
Silver (Ag)-Dissolved			91.3		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			98.7		%		80-120	23-AUG-19
Strontium (Sr)-Dissolved			89.0		%		80-120	23-AUG-19
Sulfur (S)-Dissolved			96.6		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			92.0		%		80-120	23-AUG-19





## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			98.7		%		80-120	23-AUG-19
Titanium (Ti)-Dissolved			96.2		%		80-120	23-AUG-19
Uranium (U)-Dissolved			84.9		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			92.4		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			90.4		%		80-120	23-AUG-19
Zirconium (Zr)-Dissolved			100.0		%		80-120	23-AUG-19
<b>WG3141725-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-1</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	23-AUG-19
<b>WG3141725-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-5</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	23-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768758</b>							
<b>WG3141851-18</b>	<b>LCS</b>							
Ammonia as N			103.4		%		85-115	23-AUG-19
<b>WG3141851-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	23-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrite (as N)			105.9		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Nitrite (as N)			117.6		%		75-125	22-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Nitrate (as N)			113.4		%		75-125	22-AUG-19
<b>OH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	23-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769169</b>							
<b>WG3143970-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	26-AUG-19
<b>WG3143970-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767467</b>							
<b>WG3141919-30</b>	<b>LCS</b>							
Phosphorus (P)-Total			112.9		%		80-120	23-AUG-19
<b>WG3141919-29</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
pH		8.20	8.22	J	pH	0.02	0.2	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4765949</b>							
<b>WG3140634-26</b>	<b>DUP</b>	<b>L2333917-1</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3140634-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	22-AUG-19
<b>WG3140634-25</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.7		%		80-120	22-AUG-19
<b>WG3140634-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3140634-6</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Sulfate (SO4)		1.48	1.46		mg/L	1.5	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Sulfate (SO4)			111.2		%		75-125	22-AUG-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768900</b>							
<b>WG3141391-14</b>	<b>LCS</b>							
Total Dissolved Solids			100.7		%		85-115	23-AUG-19
<b>WG3141391-13</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-AUG-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768755</b>							
<b>WG3143573-3</b>	<b>DUP</b>	<b>L2333917-1</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3143573-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.7		%		75-125	26-AUG-19
<b>WG3143573-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	26-AUG-19
<b>WG3143573-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.3		%		75-125	26-AUG-19
<b>WG3143573-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.2		%		75-125	26-AUG-19
<b>WG3143573-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-4</b>	<b>MS</b>	<b>L2333917-1</b>						
Total Kjeldahl Nitrogen			114.0		%		70-130	26-AUG-19
<b>TSS-L-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768837</b>							
<b>WG3143202-4</b>	<b>LCS</b>							
Total Suspended Solids			103.2		%		85-115	26-AUG-19
<b>WG3143202-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4765274</b>							
<b>WG3140978-12</b>	<b>DUP</b>	<b>L2333917-2</b>						
Turbidity		43.3	45.5		NTU	5.0	15	22-AUG-19
<b>WG3140978-11</b>	<b>LCS</b>							
Turbidity			94.0		%		85-115	22-AUG-19
<b>WG3140978-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-AUG-19

# Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	20-AUG-19 09:15	26-AUG-19 14:45	0.25	150	hours	EHTR-FM
	2	20-AUG-19 12:20	26-AUG-19 17:15	0.25	149	hours	EHTR-FM
	3	20-AUG-19 11:15	26-AUG-19 17:15	0.25	150	hours	EHTR-FM
	4	20-AUG-19 14:30	26-AUG-19 17:15	0.25	147	hours	EHTR-FM
	5	20-AUG-19 15:50	26-AUG-19 17:15	0.25	145	hours	EHTR-FM
pH							
	1	20-AUG-19 09:15	23-AUG-19 13:00	0.25	76	hours	EHTR-FM
	2	20-AUG-19 12:20	23-AUG-19 13:00	0.25	73	hours	EHTR-FM
	3	20-AUG-19 11:15	23-AUG-19 13:00	0.25	74	hours	EHTR-FM
	4	20-AUG-19 14:30	23-AUG-19 13:00	0.25	71	hours	EHTR-FM
	5	20-AUG-19 15:50	23-AUG-19 13:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333917 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Report To				Report Format / Distribution			Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																																												
Contact and company name below will appear on the final report				Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																												
Company: SNC-Lavalin - Nelson				Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			PRIORITY (Business Days)			EMERGENCY																																																																									
Contact: Katrina Cheung				<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box			4 day [P4-20%] <input type="checkbox"/>			1 Business day [E1 - 100%] <input type="checkbox"/>																																																																									
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576				Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-25%] <input type="checkbox"/>			Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>																																																																									
Company address below will appear on the final report				Emails: SNC - 'Katrina.Cheung'			Date and Time Required for all E&P TATs:																																																																												
Street: 520 Lake Street				'Genevieve.Pomerleau', Vicky.Lipinski@snc-lavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																																																																												
City/Province: Nelson, BC				Teck - 'Cam.Jaeger', Jenny.Hutchison@teck.com			Analysis Request																																																																												
Postal Code: V1L 4C6				Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																												
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P P F/P P																																																																												
Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				Emails: Katrina.Cheung@snc-lavalin.com			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>DOC (C-DIS-ORG-LOW-CL)</td> <td>TOC (C-TOT-ORG-LOW-CL)</td> <td>BCMDG D-Met + Hg (MET-D-BCMDG-CL)</td> <td>Total N Calc. (N-T-CALC-C)</td> <td>Nitrate + Nitrite Calc. (N2N3-CALC-C)</td> <td>Teck Routine (TECKCOAL-ROUTINE-C)</td> <td>TKN (TKN-L-F-CL)</td> <td>Bicarbonate (BIC-CL)</td> <td>Carbonate (CO3-CL)</td> <td>Hydroxide (OH-CL)</td> <td>SAMPLES ON HOLD</td> <td>Sample is hazardous (please provide further details)</td> <td>NUMBER OF CONTAINERS</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>												DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-C)	Nitrate + Nitrite Calc. (N2N3-CALC-C)	Teck Routine (TECKCOAL-ROUTINE-C)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																																																				
DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-C)	Nitrate + Nitrite Calc. (N2N3-CALC-C)	Teck Routine (TECKCOAL-ROUTINE-C)	TKN (TKN-L-F-CL)													Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																																																											
Company: Same as Report To				Emails: payables@snc-lavalin.com																																																																															
Contact: Same as Report To																																																																																			
Project Information				Oil and Gas Required Fields (client use)																																																																															
ALS Account # / Quote #: MOR125 / Q72340				AFE/Cost Center:		PO#																																																																													
Job #: 658004				Major/Minor Code:		Routing Code:																																																																													
PO / AFE: 658004				Requisitioner:																																																																															
LSD:				Location:																																																																															
ALS Lab Work Order # (lab use only):				ALS Contact: Ryan Smyth 403-407-1795		Sampler: <u>M/IC</u> G. Hansen																																																																													
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BCMDG	Total N	Nitrate + Nitrite	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	SAMPLES ON HOLD	Sample is hazardous	NUMBER OF CONTAINERS																																																																	
	<del>GH_MW-MC-16_WG_2019_0 NP</del>	<del>GH_MW-MC-16</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	GH_MW-MC-1D_WG_2019_08 20 NP	GH_MW-MC-1D	20-AUG-19	9:15	Water	R	R	R	R	R	R	R	R	R	R			5																																																																	
	<del>GH_MW-MC-26_WG_2019_0 NP</del>	<del>GH_MW-MC-26</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	<del>GH_MW-MC-2D_WG_2019_0 NP</del>	<del>GH_MW-MC-2D</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	<del>GH_MW-Willow-1S_WG_2019_0 NP</del>	<del>GH_MW-Willow-1S</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	GH_MW-Willow-1D_WG_2019_08 20 NP	GH_MW-Willow-1D	20-AUG-19	12:20	Water	R	R	R	R	R	R	R	R	R	R			5																																																																	
	GH_MW-Willow-2S_WG_2019_08 20 NP	GH_MW-Willow-2S	20-AUG-19	11:15	Water	R	R	R	R	R	R	R	R	R	R			5																																																																	
	GH_MW-Willow-2D_WG_2019_08 20 NP	GH_MW-Willow-2D	20-AUG-19	14:30	Water	R	R	R	R	R	R	R	R	R	R			5																																																																	
	GH_MW-Willow-3S_WG_2019_08 20 NP	GH_MW-Willow-3S	20-AUG-19	15:50	Water	R	R	R	R	R	R	R	R	R	R			5																																																																	
	<del>GH_MW-Willow-3D_WG_2019_0 NP</del>	<del>GH_MW-Willow-3D</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	<del>GH_MW-Wolf-1S_WG_2019_0 NP</del>	<del>GH_MW-Wolf-1S</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				
	<del>GH_MW-Wolf-1D_WG_2019_0 NP</del>	<del>GH_MW-Wolf-1D</del>			Water	R	R	R	R	R	R	R	R	R	R																																																																				



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 14-NOV-19  
Report Date: 27-NOV-19 14:22 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2382127  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-10  
Legal Site Desc:

Comments: Iron Bacteria, Sulphate Reducing expired on L2382127-3, -4 for one hour.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-1 GH_POTW10_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 13:07							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
Iron Bacteria	500	IRB:BR	1.0	CFU/mL		14-NOV-19	R4923718
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		14-NOV-19	R4923718
Total Kjeldahl Nitrogen	0.213		0.050	mg/L		16-NOV-19	R4912590
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-NOV-19	R4919848
Total Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4916630
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	0.00106		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	0.0173		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.037		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	0.0100		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	88.9		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Iron (Fe)-Dissolved	0.489		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	0.000064		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0154		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	40.6		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.0495		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.00309		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00359	DTC	0.00050	mg/L	20-NOV-19	20-NOV-19	R4918528
Potassium (K)-Dissolved	1.63		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	4.00		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	4.90		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	4.92		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	0.543		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.000717		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0012		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	389		0.50	mg/L		20-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-NOV-19	R4915189
<b>Total Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-1 GH_POTW10_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 13:07							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Arsenic (As)-Total	0.00132		0.00010	mg/L		18-NOV-19	R4915189
Barium (Ba)-Total	0.0190		0.00010	mg/L		18-NOV-19	R4915189
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Boron (B)-Total	0.036		0.010	mg/L		18-NOV-19	R4915189
Cadmium (Cd)-Total	0.0113		0.0050	ug/L		18-NOV-19	R4915189
Calcium (Ca)-Total	90.3		0.050	mg/L		18-NOV-19	R4915189
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Cobalt (Co)-Total	0.18		0.10	ug/L		18-NOV-19	R4915189
Copper (Cu)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Iron (Fe)-Total	1.13		0.010	mg/L		18-NOV-19	R4915189
Lead (Pb)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Lithium (Li)-Total	0.0166		0.0010	mg/L		18-NOV-19	R4915189
Magnesium (Mg)-Total	42.9		0.10	mg/L		18-NOV-19	R4915189
Manganese (Mn)-Total	0.0537		0.00010	mg/L		18-NOV-19	R4915189
Molybdenum (Mo)-Total	0.00279		0.000050	mg/L		18-NOV-19	R4915189
Nickel (Ni)-Total	0.00207		0.00050	mg/L		18-NOV-19	R4915189
Potassium (K)-Total	1.73		0.050	mg/L		18-NOV-19	R4915189
Selenium (Se)-Total	3.61		0.050	ug/L		18-NOV-19	R4915189
Silicon (Si)-Total	5.12		0.10	mg/L		18-NOV-19	R4915189
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Sodium (Na)-Total	5.08		0.050	mg/L		18-NOV-19	R4915189
Strontium (Sr)-Total	0.516		0.00020	mg/L		18-NOV-19	R4915189
Thallium (Tl)-Total	0.000011		0.000010	mg/L		18-NOV-19	R4915189
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-NOV-19	R4915189
Uranium (U)-Total	0.000749		0.000010	mg/L		18-NOV-19	R4915189
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.2		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	2.4		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0541		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.53		0.50	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	641		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.892		0.020	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Ion Balance	96.1		-100	%		20-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.0			%		20-NOV-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-1 GH_POTW10_WG_2019-10-01_NP Sampled By: CLIENT on 13-NOV-19 @ 13:07 Matrix: WG							
<b>Ion Balance Calculation</b>							
Anion Sum	8.39			meq/L		20-NOV-19	
Cation Sum	8.06			meq/L		20-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.445		0.0050	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0101		0.0010	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b>							
ORP	318		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	194		0.30	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	480	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b>							
Total Suspended Solids	8.0		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	26.3		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.31		0.10	pH		15-NOV-19	R4906891
L2382127-2 GH_POTW15_WG_2019-10-01_NP Sampled By: CLIENT on 13-NOV-19 @ 13:18 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.61		0.50	mg/L		15-NOV-19	R4912047
Iron Bacteria	9000	IRB:BC	1.0	CFU/mL		14-NOV-19	R4923718
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		14-NOV-19	R4923718
Total Kjeldahl Nitrogen	0.074		0.050	mg/L		16-NOV-19	R4912590
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-NOV-19	R4919848
Total Organic Carbon	0.65		0.50	mg/L		15-NOV-19	R4912047
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	0.00174		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	0.0196		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.021		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	0.0134		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	124		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	0.21		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-2 GH_POTW15_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 13:18							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Iron (Fe)-Dissolved	0.750		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0143		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	43.4		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.183		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.00251		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00102		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Potassium (K)-Dissolved	1.49		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	4.47		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	10.7		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	0.382		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	0.000016		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.00141		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0021		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	490		0.50	mg/L		19-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-NOV-19	R4915189
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Arsenic (As)-Total	0.00170		0.00010	mg/L		18-NOV-19	R4915189
Barium (Ba)-Total	0.0215		0.00010	mg/L		18-NOV-19	R4915189
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Boron (B)-Total	0.021		0.010	mg/L		18-NOV-19	R4915189
Cadmium (Cd)-Total	0.0129		0.0050	ug/L		18-NOV-19	R4915189
Calcium (Ca)-Total	127		0.050	mg/L		18-NOV-19	R4915189
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Cobalt (Co)-Total	0.21		0.10	ug/L		18-NOV-19	R4915189
Copper (Cu)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Iron (Fe)-Total	0.809		0.010	mg/L		18-NOV-19	R4915189
Lead (Pb)-Total	0.000077		0.000050	mg/L		18-NOV-19	R4915189
Lithium (Li)-Total	0.0152		0.0010	mg/L		18-NOV-19	R4915189
Magnesium (Mg)-Total	45.5		0.10	mg/L		18-NOV-19	R4915189
Manganese (Mn)-Total	0.195		0.00010	mg/L		18-NOV-19	R4915189
Molybdenum (Mo)-Total	0.00239		0.000050	mg/L		18-NOV-19	R4915189
Nickel (Ni)-Total	0.00137		0.00050	mg/L		18-NOV-19	R4915189
Potassium (K)-Total	1.58		0.050	mg/L		18-NOV-19	R4915189
Selenium (Se)-Total	<0.050		0.050	ug/L		18-NOV-19	R4915189
Silicon (Si)-Total	4.66		0.10	mg/L		18-NOV-19	R4915189
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Sodium (Na)-Total	11.2		0.050	mg/L		18-NOV-19	R4915189
Strontium (Sr)-Total	0.384		0.00020	mg/L		18-NOV-19	R4915189
Thallium (Tl)-Total	0.000016		0.000010	mg/L		18-NOV-19	R4915189
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-2 GH_POTW15_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 13:18							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-NOV-19	R4915189
Uranium (U)-Total	0.00144		0.000010	mg/L		18-NOV-19	R4915189
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.4		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	228		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	228		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0406		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.101		0.050	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	29.4		0.50	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	810		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.152		0.020	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Ion Balance	95.4		-100	%		19-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.3			%		19-NOV-19	
Anion Sum	10.8			meq/L		19-NOV-19	
Cation Sum	10.3			meq/L		19-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b>							
ORP	371		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	261		0.30	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	647	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.5		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	8.12		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.28		0.10	pH		15-NOV-19	R4906891
L2382127-3 GH_POTW17_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 11:03							
Matrix: WG							
<b>Miscellaneous Parameters</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-3 GH_POTW17_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 11:03							
Matrix: WG							
Dissolved Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		14-NOV-19	R4923718
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		14-NOV-19	R4923718
Total Kjeldahl Nitrogen	0.080		0.050	mg/L		16-NOV-19	R4912590
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-NOV-19	R4919848
Total Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	0.0272		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.021		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	0.0450		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	182		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Iron (Fe)-Dissolved	0.139		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0128		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	74.1		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.0585		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.00110		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00719		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Potassium (K)-Dissolved	1.61		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	9.42		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	4.72		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	7.92		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	0.489		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.00254		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0047		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	760		0.50	mg/L		19-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-NOV-19	R4915189
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-3 GH_POTW17_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 11:03							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Arsenic (As)-Total	0.00028		0.00010	mg/L		18-NOV-19	R4915189
Barium (Ba)-Total	0.0309		0.00010	mg/L		18-NOV-19	R4915189
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Boron (B)-Total	0.021		0.010	mg/L		18-NOV-19	R4915189
Cadmium (Cd)-Total	0.0546		0.0050	ug/L		18-NOV-19	R4915189
Calcium (Ca)-Total	180		0.050	mg/L		18-NOV-19	R4915189
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Cobalt (Co)-Total	0.15		0.10	ug/L		18-NOV-19	R4915189
Copper (Cu)-Total	0.00054		0.00050	mg/L		18-NOV-19	R4915189
Iron (Fe)-Total	0.665		0.010	mg/L		18-NOV-19	R4915189
Lead (Pb)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Lithium (Li)-Total	0.0139		0.0010	mg/L		18-NOV-19	R4915189
Magnesium (Mg)-Total	79.7		0.10	mg/L		18-NOV-19	R4915189
Manganese (Mn)-Total	0.0698		0.00010	mg/L		18-NOV-19	R4915189
Molybdenum (Mo)-Total	0.000998		0.000050	mg/L		18-NOV-19	R4915189
Nickel (Ni)-Total	0.00784		0.00050	mg/L		18-NOV-19	R4915189
Potassium (K)-Total	1.68		0.050	mg/L		18-NOV-19	R4915189
Selenium (Se)-Total	7.72		0.050	ug/L		18-NOV-19	R4915189
Silicon (Si)-Total	4.94		0.10	mg/L		18-NOV-19	R4915189
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Sodium (Na)-Total	8.23		0.050	mg/L		18-NOV-19	R4915189
Strontium (Sr)-Total	0.460		0.00020	mg/L		18-NOV-19	R4915189
Thallium (Tl)-Total	0.000012		0.000010	mg/L		18-NOV-19	R4915189
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-NOV-19	R4915189
Uranium (U)-Total	0.00262		0.000010	mg/L		18-NOV-19	R4915189
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Zinc (Zn)-Total	0.0052		0.0030	mg/L		18-NOV-19	R4915189
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	16.8		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	283		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	283		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0146		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	18.8	DLHC	2.5	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1100		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.14	DLHC	0.10	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.5			%		19-NOV-19	
Anion Sum	16.7			meq/L		19-NOV-19	
Cation Sum	15.6			meq/L		19-NOV-19	
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-3 GH_POTW17_WG_2019-10-01_NP Sampled By: CLIENT on 13-NOV-19 @ 11:03 Matrix: WG							
<b>Ion Balance Calculation</b> Ion Balance	93.3		-100	%		19-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.443	DLHC	0.025	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b> ORP	399		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b> Sulfate (SO4)	504	DLHC	1.5	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b> Total Dissolved Solids	1020	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b> Total Suspended Solids	2.3		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b> Turbidity	4.27		0.10	NTU		14-NOV-19	R4908127
<b>pH</b> pH	8.26		0.10	pH		15-NOV-19	R4906891
L2382127-4 GH_POTW06_WG_2019-10-01_NP Sampled By: CLIENT on 13-NOV-19 @ 10:33 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
Iron Bacteria	25.0	IRB:BR	1.0	CFU/mL		14-NOV-19	R4923718
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		14-NOV-19	R4923718
Total Kjeldahl Nitrogen	0.098	TKNI	0.050	mg/L		16-NOV-19	R4912590
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-NOV-19	R4919848
Total Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	0.0504		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.015		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	0.0489		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	171		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086
Copper (Cu)-Dissolved	0.00138		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-4 GH_POTW06_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 10:33							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Iron (Fe)-Dissolved	0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	0.000295		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0112		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	85.7		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.00132		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.000946		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00097		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Potassium (K)-Dissolved	1.51		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	28.5		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	4.19		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	6.49		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	0.326		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.00371		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0035		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	779		0.50	mg/L		19-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-NOV-19	R4915189
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Arsenic (As)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Barium (Ba)-Total	0.0565		0.00010	mg/L		18-NOV-19	R4915189
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Boron (B)-Total	0.015		0.010	mg/L		18-NOV-19	R4915189
Cadmium (Cd)-Total	0.0472		0.0050	ug/L		18-NOV-19	R4915189
Calcium (Ca)-Total	172		0.050	mg/L		18-NOV-19	R4915189
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Cobalt (Co)-Total	<0.10		0.10	ug/L		18-NOV-19	R4915189
Copper (Cu)-Total	0.00241		0.00050	mg/L		18-NOV-19	R4915189
Iron (Fe)-Total	0.012		0.010	mg/L		18-NOV-19	R4915189
Lead (Pb)-Total	0.000378		0.000050	mg/L		18-NOV-19	R4915189
Lithium (Li)-Total	0.0122		0.0010	mg/L		18-NOV-19	R4915189
Magnesium (Mg)-Total	92.9		0.10	mg/L		18-NOV-19	R4915189
Manganese (Mn)-Total	0.00148		0.00010	mg/L		18-NOV-19	R4915189
Molybdenum (Mo)-Total	0.000860		0.000050	mg/L		18-NOV-19	R4915189
Nickel (Ni)-Total	0.00104		0.00050	mg/L		18-NOV-19	R4915189
Potassium (K)-Total	1.60		0.050	mg/L		18-NOV-19	R4915189
Selenium (Se)-Total	24.4		0.050	ug/L		18-NOV-19	R4915189
Silicon (Si)-Total	4.56		0.10	mg/L		18-NOV-19	R4915189
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Sodium (Na)-Total	6.93		0.050	mg/L		18-NOV-19	R4915189
Strontium (Sr)-Total	0.323		0.00020	mg/L		18-NOV-19	R4915189
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Tin (Sn)-Total	0.00022		0.00010	mg/L		18-NOV-19	R4915189
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-NOV-19	R4915189

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-4 GH_POTW06_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 10:33							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Uranium (U)-Total	0.00380		0.000010	mg/L		18-NOV-19	R4915189
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Zinc (Zn)-Total	0.0034		0.0030	mg/L		18-NOV-19	R4915189
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.5		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	280		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	8.6		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	289		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.4	DLHC	2.5	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1120		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.14	DLHC	0.10	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Ion Balance	91.0		-100	%		19-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.7			%		19-NOV-19	
Anion Sum	17.4			meq/L		19-NOV-19	
Cation Sum	15.9			meq/L		19-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.31	DLHC	0.025	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b>							
ORP	380		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	530	DLHC	1.5	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1040	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.5		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.37		0.10	pH		15-NOV-19	R4906891
L2382127-5 GH_POTW09_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 12:11							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-5 GH_POTW09_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 12:11							
Matrix: WG							
Iron Bacteria	2200	IRB:BR	1.0	CFU/mL		14-NOV-19	R4923718
Sulfur Reducing Bacteria	<1.0		1.0	CFU/mL		14-NOV-19	R4923718
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		16-NOV-19	R4912590
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		21-NOV-19	R4919848
Total Organic Carbon	<0.50		0.50	mg/L		15-NOV-19	R4912047
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	18-NOV-19	18-NOV-19	R4915189
Dissolved Metals Filtration Location	FIELD					18-NOV-19	R4915129
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					18-NOV-19	R4915129
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	18-NOV-19	18-NOV-19	R4915189
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Arsenic (As)-Dissolved	0.00047		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Barium (Ba)-Dissolved	0.0333		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-19	18-NOV-19	R4915189
Boron (B)-Dissolved	0.019		0.010	mg/L	18-NOV-19	18-NOV-19	R4915189
Cadmium (Cd)-Dissolved	0.0075		0.0050	ug/L	18-NOV-19	18-NOV-19	R4915189
Calcium (Ca)-Dissolved	94.8		0.050	mg/L	18-NOV-19	18-NOV-19	R4915189
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	18-NOV-19	18-NOV-19	R4915189
Copper (Cu)-Dissolved	0.00156		0.00020	mg/L	18-NOV-19	18-NOV-19	R4915189
Iron (Fe)-Dissolved	0.160		0.010	mg/L	18-NOV-19	18-NOV-19	R4915189
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	18-NOV-19	18-NOV-19	R4915189
Lithium (Li)-Dissolved	0.0120		0.0010	mg/L	18-NOV-19	18-NOV-19	R4915189
Magnesium (Mg)-Dissolved	41.8		0.10	mg/L	18-NOV-19	18-NOV-19	R4915189
Manganese (Mn)-Dissolved	0.193		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Molybdenum (Mo)-Dissolved	0.00246		0.000050	mg/L	18-NOV-19	18-NOV-19	R4915189
Nickel (Ni)-Dissolved	0.00071		0.00050	mg/L	18-NOV-19	18-NOV-19	R4915189
Potassium (K)-Dissolved	1.57		0.050	mg/L	18-NOV-19	18-NOV-19	R4915189
Selenium (Se)-Dissolved	0.926		0.050	ug/L	18-NOV-19	18-NOV-19	R4915189
Silicon (Si)-Dissolved	5.03		0.050	mg/L	18-NOV-19	18-NOV-19	R4915189
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	18-NOV-19	18-NOV-19	R4915189
Sodium (Na)-Dissolved	7.14		0.050	mg/L	18-NOV-19	18-NOV-19	R4915189
Strontium (Sr)-Dissolved	0.336		0.00020	mg/L	18-NOV-19	18-NOV-19	R4915189
Thallium (Tl)-Dissolved	0.000015		0.000010	mg/L	18-NOV-19	18-NOV-19	R4915189
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	18-NOV-19	18-NOV-19	R4915189
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	18-NOV-19	18-NOV-19	R4915189
Uranium (U)-Dissolved	0.00212		0.000010	mg/L	18-NOV-19	18-NOV-19	R4915189
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	18-NOV-19	18-NOV-19	R4915189
Zinc (Zn)-Dissolved	0.0039		0.0010	mg/L	18-NOV-19	18-NOV-19	R4915189
<b>Hardness</b>							
Hardness (as CaCO3)	409		0.50	mg/L		18-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		18-NOV-19	R4915189
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		18-NOV-19	R4915189
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-5 GH_POTW09_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 12:11							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00048		0.00010	mg/L		18-NOV-19	R4915189
Barium (Ba)-Total	0.0347		0.00010	mg/L		18-NOV-19	R4915189
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Boron (B)-Total	0.020		0.010	mg/L		18-NOV-19	R4915189
Cadmium (Cd)-Total	0.0105		0.0050	ug/L		18-NOV-19	R4915189
Calcium (Ca)-Total	98.7		0.050	mg/L		18-NOV-19	R4915189
Chromium (Cr)-Total	0.00020		0.00010	mg/L		18-NOV-19	R4915189
Cobalt (Co)-Total	0.19		0.10	ug/L		18-NOV-19	R4915189
Copper (Cu)-Total	0.00108		0.00050	mg/L		18-NOV-19	R4915189
Iron (Fe)-Total	0.175		0.010	mg/L		18-NOV-19	R4915189
Lead (Pb)-Total	<0.000050		0.000050	mg/L		18-NOV-19	R4915189
Lithium (Li)-Total	0.0127		0.0010	mg/L		18-NOV-19	R4915189
Magnesium (Mg)-Total	42.4		0.10	mg/L		18-NOV-19	R4915189
Manganese (Mn)-Total	0.200		0.00010	mg/L		18-NOV-19	R4915189
Molybdenum (Mo)-Total	0.00262		0.000050	mg/L		18-NOV-19	R4915189
Nickel (Ni)-Total	0.00083		0.00050	mg/L		18-NOV-19	R4915189
Potassium (K)-Total	1.62		0.050	mg/L		18-NOV-19	R4915189
Selenium (Se)-Total	0.897		0.050	ug/L		18-NOV-19	R4915189
Silicon (Si)-Total	5.34		0.10	mg/L		18-NOV-19	R4915189
Silver (Ag)-Total	<0.000010		0.000010	mg/L		18-NOV-19	R4915189
Sodium (Na)-Total	7.36		0.050	mg/L		18-NOV-19	R4915189
Strontium (Sr)-Total	0.349		0.00020	mg/L		18-NOV-19	R4915189
Thallium (Tl)-Total	0.000016		0.000010	mg/L		18-NOV-19	R4915189
Tin (Sn)-Total	<0.00010		0.00010	mg/L		18-NOV-19	R4915189
Titanium (Ti)-Total	<0.010		0.010	mg/L		18-NOV-19	R4915189
Uranium (U)-Total	0.00227		0.000010	mg/L		18-NOV-19	R4915189
Vanadium (V)-Total	<0.00050		0.00050	mg/L		18-NOV-19	R4915189
Zinc (Zn)-Total	0.0039		0.0030	mg/L		18-NOV-19	R4915189
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.7		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	240		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	6.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	246		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0251		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.44		0.50	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	662		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.838		0.020	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.0			%		18-NOV-19	
Anion Sum	8.88			meq/L		18-NOV-19	
Cation Sum	8.54			meq/L		18-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	96.1		-100	%		18-NOV-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382127-5 GH_POTW09_WG_2019-10-01_NP							
Sampled By: CLIENT on 13-NOV-19 @ 12:11							
Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0084		0.0050	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b>							
ORP	343		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	180		0.30	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	489	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	0.87		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.37		0.10	pH		15-NOV-19	R4906891

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
IRB:BC	Brown Cloudy: IRB dominant
IRB:BR	Brown Ring: IRB dominant
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.			



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IB-BART-SQ-CL	Water	Iron Bacteria, Semi-quantitative	Standard Methods BART
Iron Related Bacteria- IRB BART Method (Semi-Quantitative):			
A small amount of sample is transferred to a vial (anaerobic chamber). Approximate IRB populations (colony forming units /mL) are determined by observing the reaction within the chamber over a period of 9 days. This method is applicable to both iron-oxidizing and iron-reducing bacteria.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
SRB-BART-SQ-CL	Water	Sulphate Reducing Bacteria, Semi-quantit	Standard Methods BART
		Sulfate-Reducing Bacteria SRB BART Method (Semi-Quantitative):	
		A small amount of sample is transferred to a vial (anaerobic chamber) that contains ferrous iron. If SRB activity is present sulfate is reduced to hydrogen sulphide, which reacts with the ferrous iron to form black iron sulfide. The formation of this product is observed over 9 days to determine the approximate SRB population (colony forming units /ml). Operators using the SRB-BART method for the detection of deep-seated SRB infestations associated with wells and distribution systems may find it advantageous to have observations continued to the 15th day. This is because some SRB do not exhibit reaction patterns until other bacteria have already grown within the tester. In water pipelines and biofouling water wells the time lags can be delayed until days 11 to 15.	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-10

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909572</b>							
<b>WG3219589-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	14-NOV-19
<b>WG3219589-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.3		%		85-115	14-NOV-19
<b>WG3219589-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>WG3219589-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906891</b>							
<b>WG3218717-21</b>	<b>DUP</b>	<b>L2382127-5</b>						
Alkalinity, Total (as CaCO3)		246	248		mg/L	1.0	20	15-NOV-19
<b>WG3218717-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.9		%		85-115	15-NOV-19
<b>WG3218717-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.8		%		80-120	18-NOV-19
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-19
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-NOV-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221208-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			102.0		%		80-120	18-NOV-19
<b>WG3221208-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	18-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-3</b>	<b>DUP</b>	<b>L2382127-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	14-NOV-19
<b>WG3219798-2</b>	<b>LCS</b>							
Bromide (Br)			96.9		%		85-115	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-NOV-19
<b>WG3219798-4</b>	<b>MS</b>	<b>L2382127-5</b>						
Bromide (Br)			103.0		%		75-125	14-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4912047</b>							
<b>WG3220406-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			115.5		%		80-120	15-NOV-19
<b>WG3220406-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4912047</b>							
<b>WG3220406-2</b>	<b>LCS</b>							
Total Organic Carbon			105.1		%		80-120	15-NOV-19
<b>WG3220406-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-3</b>	<b>DUP</b>	<b>L2382127-5</b>						
Chloride (Cl)		6.44	6.43		mg/L	0.1	20	14-NOV-19
<b>WG3219798-2</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	14-NOV-19
<b>WG3219798-4</b>	<b>MS</b>	<b>L2382127-5</b>						
Chloride (Cl)			107.6		%		75-125	14-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4906891</b>							
<b>WG3218717-21</b>	<b>DUP</b>	<b>L2382127-5</b>						
Conductivity (@ 25C)		662	662		uS/cm	0.0	10	15-NOV-19
<b>WG3218717-20</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.0		%		90-110	15-NOV-19
<b>WG3218717-19</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
Water								
Batch R4906891								
WG3218717-19 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	15-NOV-19
<b>F-IC-N-CL</b>								
Water								
Batch R4909613								
WG3219798-3 DUP								
Fluoride (F)								
		L2382127-5 0.838	0.855		mg/L	2.0	20	14-NOV-19
WG3219798-2 LCS								
Fluoride (F)								
			105.3		%		90-110	14-NOV-19
WG3219798-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	14-NOV-19
WG3219798-4 MS								
Fluoride (F)								
		L2382127-5	107.8		%		75-125	14-NOV-19
<b>HG-D-CVAA-VA</b>								
Water								
Batch R4915679								
WG3221215-2 LCS								
Mercury (Hg)-Dissolved								
			96.9		%		80-120	19-NOV-19
WG3221215-1 MB								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	19-NOV-19
<b>HG-T-U-CVAF-VA</b>								
Water								
Batch R4919848								
WG3224998-2 LCS								
Mercury (Hg)-Total								
			98.0		%		80-120	21-NOV-19
WG3224998-1 MB								
Mercury (Hg)-Total								
			<0.00050		ug/L		0.0005	21-NOV-19
<b>IB-BART-SQ-CL</b>								
Water								
Batch R4923718								
WG3228537-2 DUP								
Iron Bacteria								
		L2382127-1 500	500		CFU/mL	0.0	50	14-NOV-19
WG3228537-1 MB								
Iron Bacteria								
			<1.0		CFU/mL		1	14-NOV-19
<b>MET-D-CCMS-VA</b>								
Water								
Batch R4915189								
WG3221428-2 LCS								
Aluminum (Al)-Dissolved								
			102.8		%		80-120	18-NOV-19
Antimony (Sb)-Dissolved								
			100.1		%		80-120	18-NOV-19
Arsenic (As)-Dissolved								
			102.6		%		80-120	18-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			98.1		%		80-120	18-NOV-19
Bismuth (Bi)-Dissolved			96.8		%		80-120	18-NOV-19
Boron (B)-Dissolved			94.3		%		80-120	18-NOV-19
Cadmium (Cd)-Dissolved			101.1		%		80-120	18-NOV-19
Calcium (Ca)-Dissolved			97.5		%		80-120	18-NOV-19
Chromium (Cr)-Dissolved			104.0		%		80-120	18-NOV-19
Cobalt (Co)-Dissolved			101.9		%		80-120	18-NOV-19
Copper (Cu)-Dissolved			101.9		%		80-120	18-NOV-19
Iron (Fe)-Dissolved			91.5		%		80-120	18-NOV-19
Lead (Pb)-Dissolved			99.0		%		80-120	18-NOV-19
Lithium (Li)-Dissolved			99.6		%		80-120	18-NOV-19
Magnesium (Mg)-Dissolved			102.4		%		80-120	18-NOV-19
Manganese (Mn)-Dissolved			106.1		%		80-120	18-NOV-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	18-NOV-19
Nickel (Ni)-Dissolved			101.4		%		80-120	18-NOV-19
Potassium (K)-Dissolved			104.6		%		80-120	18-NOV-19
Selenium (Se)-Dissolved			94.2		%		80-120	18-NOV-19
Silicon (Si)-Dissolved			101.7		%		60-140	18-NOV-19
Silver (Ag)-Dissolved			99.9		%		80-120	18-NOV-19
Sodium (Na)-Dissolved			105.0		%		80-120	18-NOV-19
Strontium (Sr)-Dissolved			102.2		%		80-120	18-NOV-19
Thallium (Tl)-Dissolved			98.3		%		80-120	18-NOV-19
Tin (Sn)-Dissolved			96.7		%		80-120	18-NOV-19
Titanium (Ti)-Dissolved			99.9		%		80-120	18-NOV-19
Uranium (U)-Dissolved			101.7		%		80-120	18-NOV-19
Vanadium (V)-Dissolved			105.3		%		80-120	18-NOV-19
Zinc (Zn)-Dissolved			98.4		%		80-120	18-NOV-19
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.4		%		80-120	17-NOV-19
Antimony (Sb)-Dissolved			99.97		%		80-120	17-NOV-19
Arsenic (As)-Dissolved			94.7		%		80-120	17-NOV-19
Barium (Ba)-Dissolved			88.4		%		80-120	17-NOV-19
Bismuth (Bi)-Dissolved			98.9		%		80-120	17-NOV-19
Boron (B)-Dissolved			97.7		%		80-120	17-NOV-19
Cadmium (Cd)-Dissolved			93.0		%		80-120	17-NOV-19
Calcium (Ca)-Dissolved			95.4		%		80-120	17-NOV-19





## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			92.1		%		80-120	17-NOV-19
Cobalt (Co)-Dissolved			93.9		%		80-120	17-NOV-19
Copper (Cu)-Dissolved			92.3		%		80-120	17-NOV-19
Iron (Fe)-Dissolved			92.6		%		80-120	17-NOV-19
Lead (Pb)-Dissolved			98.0		%		80-120	17-NOV-19
Lithium (Li)-Dissolved			94.7		%		80-120	17-NOV-19
Magnesium (Mg)-Dissolved			93.4		%		80-120	17-NOV-19
Manganese (Mn)-Dissolved			90.1		%		80-120	17-NOV-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	17-NOV-19
Nickel (Ni)-Dissolved			92.1		%		80-120	17-NOV-19
Potassium (K)-Dissolved			96.3		%		80-120	17-NOV-19
Selenium (Se)-Dissolved			98.4		%		80-120	17-NOV-19
Silicon (Si)-Dissolved			103.1		%		60-140	17-NOV-19
Silver (Ag)-Dissolved			99.2		%		80-120	17-NOV-19
Sodium (Na)-Dissolved			97.6		%		80-120	17-NOV-19
Strontium (Sr)-Dissolved			102.7		%		80-120	17-NOV-19
Thallium (Tl)-Dissolved			103.5		%		80-120	17-NOV-19
Tin (Sn)-Dissolved			93.4		%		80-120	17-NOV-19
Titanium (Ti)-Dissolved			96.3		%		80-120	17-NOV-19
Uranium (U)-Dissolved			99.8		%		80-120	17-NOV-19
Vanadium (V)-Dissolved			95.4		%		80-120	17-NOV-19
Zinc (Zn)-Dissolved			87.6		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
<b>Batch</b>	<b>R4918528</b>							
<b>WG3223126-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.2		%		80-120	20-NOV-19
Antimony (Sb)-Dissolved			93.4		%		80-120	20-NOV-19
Arsenic (As)-Dissolved			103.4		%		80-120	20-NOV-19
Barium (Ba)-Dissolved			101.4		%		80-120	20-NOV-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	20-NOV-19
Boron (B)-Dissolved			99.2		%		80-120	20-NOV-19
Cadmium (Cd)-Dissolved			99.7		%		80-120	20-NOV-19
Calcium (Ca)-Dissolved			100.9		%		80-120	20-NOV-19
Chromium (Cr)-Dissolved			103.1		%		80-120	20-NOV-19
Cobalt (Co)-Dissolved			99.5		%		80-120	20-NOV-19
Copper (Cu)-Dissolved			99.1		%		80-120	20-NOV-19
Iron (Fe)-Dissolved			94.4		%		80-120	20-NOV-19
Lead (Pb)-Dissolved			99.3		%		80-120	20-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4918528</b>							
<b>WG3223126-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			96.2		%		80-120	20-NOV-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	20-NOV-19
Manganese (Mn)-Dissolved			99.6		%		80-120	20-NOV-19
Molybdenum (Mo)-Dissolved			95.5		%		80-120	20-NOV-19
Nickel (Ni)-Dissolved			101.0		%		80-120	20-NOV-19
Potassium (K)-Dissolved			101.5		%		80-120	20-NOV-19
Selenium (Se)-Dissolved			106.3		%		80-120	20-NOV-19
Silicon (Si)-Dissolved			104.7		%		60-140	20-NOV-19
Silver (Ag)-Dissolved			93.2		%		80-120	20-NOV-19
Sodium (Na)-Dissolved			107.1		%		80-120	20-NOV-19
Strontium (Sr)-Dissolved			95.5		%		80-120	20-NOV-19
Thallium (Tl)-Dissolved			98.2		%		80-120	20-NOV-19
Tin (Sn)-Dissolved			94.9		%		80-120	20-NOV-19
Titanium (Ti)-Dissolved			95.7		%		80-120	20-NOV-19
Uranium (U)-Dissolved			99.0		%		80-120	20-NOV-19
Vanadium (V)-Dissolved			103.7		%		80-120	20-NOV-19
Zinc (Zn)-Dissolved			97.8		%		80-120	20-NOV-19
<b>WG3223126-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4918528</b>							
<b>WG3223126-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221208-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.4		%		80-120	18-NOV-19
Antimony (Sb)-Total			107.0		%		80-120	18-NOV-19
Arsenic (As)-Total			105.1		%		80-120	18-NOV-19
Barium (Ba)-Total			104.5		%		80-120	18-NOV-19
Bismuth (Bi)-Total			102.0		%		80-120	18-NOV-19
Boron (B)-Total			97.1		%		80-120	18-NOV-19
Cadmium (Cd)-Total			104.1		%		80-120	18-NOV-19
Calcium (Ca)-Total			105.9		%		80-120	18-NOV-19
Chromium (Cr)-Total			105.7		%		80-120	18-NOV-19
Cobalt (Co)-Total			102.7		%		80-120	18-NOV-19
Copper (Cu)-Total			101.3		%		80-120	18-NOV-19
Iron (Fe)-Total			94.4		%		80-120	18-NOV-19
Lead (Pb)-Total			106.4		%		80-120	18-NOV-19
Lithium (Li)-Total			102.1		%		80-120	18-NOV-19
Magnesium (Mg)-Total			100.3		%		80-120	18-NOV-19
Manganese (Mn)-Total			109.6		%		80-120	18-NOV-19
Molybdenum (Mo)-Total			102.9		%		80-120	18-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221208-2</b>	<b>LCS</b>							
Nickel (Ni)-Total			103.0		%		80-120	18-NOV-19
Potassium (K)-Total			106.0		%		80-120	18-NOV-19
Selenium (Se)-Total			100.2		%		80-120	18-NOV-19
Silicon (Si)-Total			107.6		%		80-120	18-NOV-19
Silver (Ag)-Total			104.4		%		80-120	18-NOV-19
Sodium (Na)-Total			104.7		%		80-120	18-NOV-19
Strontium (Sr)-Total			109.2		%		80-120	18-NOV-19
Thallium (Tl)-Total			103.9		%		80-120	18-NOV-19
Tin (Sn)-Total			101.7		%		80-120	18-NOV-19
Titanium (Ti)-Total			98.9		%		80-120	18-NOV-19
Uranium (U)-Total			109.1		%		80-120	18-NOV-19
Vanadium (V)-Total			107.5		%		80-120	18-NOV-19
Zinc (Zn)-Total			99.0		%		80-120	18-NOV-19
<b>WG3221208-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	18-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	18-NOV-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	18-NOV-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	18-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	18-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	18-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	18-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	18-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221208-1</b>	<b>MB</b>							
Silicon (Si)-Total			<0.10		mg/L		0.1	18-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	18-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	18-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	18-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-NOV-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4912029</b>							
<b>WG3219851-14</b>	<b>LCS</b>							
Ammonia as N			101.0		%		85-115	16-NOV-19
<b>WG3219851-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-NOV-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-3</b>	<b>DUP</b>	<b>L2382127-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	14-NOV-19
<b>WG3219798-2</b>	<b>LCS</b>							
Nitrite (as N)			98.1		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	14-NOV-19
<b>WG3219798-4</b>	<b>MS</b>	<b>L2382127-5</b>						
Nitrite (as N)			104.9		%		75-125	14-NOV-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-3</b>	<b>DUP</b>	<b>L2382127-5</b>						
Nitrate (as N)		0.0084	0.0092		mg/L	9.1	20	14-NOV-19
<b>WG3219798-2</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	14-NOV-19
<b>WG3219798-4</b>	<b>MS</b>	<b>L2382127-5</b>						
Nitrate (as N)			108.6		%		75-125	14-NOV-19



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4908169							
WG3219158-3	CRM	CL-ORP						
ORP			214		mV		210-230	14-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4915232							
WG3221415-2	LCS							
Phosphorus (P)-Total			89.4		%		80-120	17-NOV-19
WG3221415-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4906891							
WG3218717-21	DUP	L2382127-5						
pH		8.37	8.37	J	pH	0.00	0.2	15-NOV-19
WG3218717-20	LCS							
pH			7.02		pH		6.9-7.1	15-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4907408							
WG3218931-2	LCS							
Orthophosphate-Dissolved (as P)			99.6		%		80-120	14-NOV-19
WG3218931-6	LCS							
Orthophosphate-Dissolved (as P)			101.7		%		80-120	14-NOV-19
WG3218931-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-19
WG3218931-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4909613							
WG3219798-3	DUP	L2382127-5						
Sulfate (SO4)		180	180		mg/L	0.0	20	14-NOV-19
WG3219798-2	LCS							
Sulfate (SO4)			101.9		%		90-110	14-NOV-19
WG3219798-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	14-NOV-19
WG3219798-4	MS	L2382127-5						
Sulfate (SO4)			N/A	MS-B	%		-	14-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4915195							
WG3220685-2	LCS							
Total Dissolved Solids			104.5		%		85-115	17-NOV-19
WG3220685-1	MB							
Total Dissolved Solids			<10		mg/L		10	17-NOV-19
<b>SRB-BART-SQ-CL</b>								
<b>Water</b>								
Batch	R4923718							
WG3228537-2	DUP	L2382127-1						
Sulfur Reducing Bacteria		<1.0	<1.0	RPD-NA	CFU/mL	N/A	50	14-NOV-19
WG3228537-1	MB							
Sulfur Reducing Bacteria			<1.0		CFU/mL		1	14-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4912590							
WG3220521-2	LCS							
Total Kjeldahl Nitrogen			94.7		%		75-125	16-NOV-19
WG3220521-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4916100							
WG3221140-8	LCS							
Total Suspended Solids			98.1		%		85-115	18-NOV-19
WG3221140-7	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4908127							
WG3219135-6	DUP	L2382127-2						
Turbidity		8.12	8.16		NTU	0.5	15	14-NOV-19
WG3219135-2	LCS							
Turbidity			94.5		%		85-115	14-NOV-19
WG3219135-5	LCS							
Turbidity			94.5		%		85-115	14-NOV-19
WG3219135-1	MB							
Turbidity			<0.10		NTU		0.1	14-NOV-19
WG3219135-4	MB							
Turbidity			<0.10		NTU		0.1	14-NOV-19



# Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2382127

Report Date: 27-NOV-19

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	13-NOV-19 13:07	14-NOV-19 15:45	0.25	27	hours	EHTR-FM
	2	13-NOV-19 13:18	14-NOV-19 15:45	0.25	26	hours	EHTR-FM
	3	13-NOV-19 11:03	14-NOV-19 15:45	0.25	29	hours	EHTR-FM
	4	13-NOV-19 10:33	14-NOV-19 15:45	0.25	29	hours	EHTR-FM
	5	13-NOV-19 12:11	14-NOV-19 15:45	0.25	28	hours	EHTR-FM
pH							
	1	13-NOV-19 13:07	15-NOV-19 11:00	0.25	46	hours	EHTR-FM
	2	13-NOV-19 13:18	15-NOV-19 11:00	0.25	46	hours	EHTR-FM
	3	13-NOV-19 11:03	15-NOV-19 11:00	0.25	48	hours	EHTR-FM
	4	13-NOV-19 10:33	15-NOV-19 11:00	0.25	48	hours	EHTR-FM
	5	13-NOV-19 12:11	15-NOV-19 11:00	0.25	47	hours	EHTR-FM
<b>Bacteriological Tests</b>							
Iron Bacteria, Semi-quantitative							
	3	13-NOV-19 11:03	14-NOV-19 11:45	24	25	hours	EHTL
	4	13-NOV-19 10:33	14-NOV-19 11:45	24	25	hours	EHTL
Sulphate Reducing Bacteria, Semi-quantit							
	3	13-NOV-19 11:03	14-NOV-19 11:45	24	25	hours	EHTL
	4	13-NOV-19 10:33	14-NOV-19 11:45	24	25	hours	EHTL

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2382127 were received on 14-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-10-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	leigh.stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoat@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

**SAMPLE DETAILS**



L2382127-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
GH_POTW10_WG_2019-10-01_NP	GH_POTW10	WG		2019/11/13	13:07	G	8
GH_POTW15_WG_2019-10-01_NP	GH_POTW15	WG		2019/11/13	13:18	G	8
GH_POTW17_WG_2019-10-01_NP	GH_POTW17	WG		2019/11/13	11:03	G	8
GH_POTW06_WG_2019-10-01_NP	GH_POTW06	WG		2019/11/13	10:33	G	8
GH_POTW09_WG_2019-10-01_NP	GH_POTW09	WG		2019/11/13	12:11	G	8

**ANALYSIS REQUESTED**

PREP	Y	N	Y	N	Y	N	N	N				
H2SO4			HCL		HNO3		NONE	HNO3		NONE		
ALS Package-DOC			HG-D-CVAF-VA		TECKCOAL-MET-D-VA		TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA		HG-T-U-CVAF-VA		SULFUR/IRON BACTERIA
ALS Package-TKN/TOC												
1	1	1	1		1	1	1	1	1	1		
1	1	1	1		1	1	1	1	1	1		
1	1	1	1		1	1	1	1	1	1		
1	1	1	1		1	1	1	1	1	1		

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*Dk*

*11/14/09*

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Mobile #

Sampler's Signature

Date/Time

*30*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 21-NOV-19  
Report Date: 28-NOV-19 14:31 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2385871  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-10  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-1 GH_MW-GHC-1A_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 13:20							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.03		0.50	mg/L		22-NOV-19	R4921791
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-NOV-19	R4921895
Mercury (Hg)-Total	0.00052		0.00050	ug/L		26-NOV-19	R4925446
Total Organic Carbon	0.97		0.50	mg/L		22-NOV-19	R4921791
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-19	23-NOV-19	R4921842
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-19	24-NOV-19	R4922147
Dissolved Mercury Filtration Location	FIELD					23-NOV-19	R4921982
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-19	23-NOV-19	R4921842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Barium (Ba)-Dissolved	0.0787		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Boron (B)-Dissolved	0.032		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cadmium (Cd)-Dissolved	0.0175		0.0050	ug/L	22-NOV-19	23-NOV-19	R4921842
Calcium (Ca)-Dissolved	144		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-NOV-19	23-NOV-19	R4921842
Copper (Cu)-Dissolved	0.00058		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Lithium (Li)-Dissolved	0.0166		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
Magnesium (Mg)-Dissolved	58.3		0.10	mg/L	22-NOV-19	23-NOV-19	R4921842
Manganese (Mn)-Dissolved	0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Molybdenum (Mo)-Dissolved	0.000697		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Nickel (Ni)-Dissolved	0.00089		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Potassium (K)-Dissolved	1.47		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Selenium (Se)-Dissolved	4.81		0.050	ug/L	22-NOV-19	23-NOV-19	R4921842
Silicon (Si)-Dissolved	4.65		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Sodium (Na)-Dissolved	5.28		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Strontium (Sr)-Dissolved	0.502		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Uranium (U)-Dissolved	0.00293		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
<b>Hardness</b>							
Hardness (as CaCO3)	600		0.50	mg/L		25-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-NOV-19	R4921842
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0748		0.0030	mg/L		23-NOV-19	R4921842
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-1 GH_MW-GHC-1A_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 13:20							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00025		0.00010	mg/L		23-NOV-19	R4921842
Barium (Ba)-Total	0.0832		0.00010	mg/L		23-NOV-19	R4921842
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Boron (B)-Total	0.036		0.010	mg/L		23-NOV-19	R4921842
Cadmium (Cd)-Total	0.0233		0.0050	ug/L		23-NOV-19	R4921842
Calcium (Ca)-Total	149		0.050	mg/L		23-NOV-19	R4921842
Chromium (Cr)-Total	0.00019		0.00010	mg/L		23-NOV-19	R4921842
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-NOV-19	R4921842
Copper (Cu)-Total	0.00064		0.00050	mg/L		23-NOV-19	R4921842
Iron (Fe)-Total	0.426		0.010	mg/L		23-NOV-19	R4921842
Lead (Pb)-Total	0.000076		0.000050	mg/L		23-NOV-19	R4921842
Lithium (Li)-Total	0.0175		0.0010	mg/L		23-NOV-19	R4921842
Magnesium (Mg)-Total	56.4		0.10	mg/L		23-NOV-19	R4921842
Manganese (Mn)-Total	0.00213		0.00010	mg/L		23-NOV-19	R4921842
Molybdenum (Mo)-Total	0.000713		0.000050	mg/L		23-NOV-19	R4921842
Nickel (Ni)-Total	0.00104		0.00050	mg/L		23-NOV-19	R4921842
Potassium (K)-Total	1.44		0.050	mg/L		23-NOV-19	R4921842
Selenium (Se)-Total	4.00		0.050	ug/L		23-NOV-19	R4921842
Silicon (Si)-Total	4.86		0.10	mg/L		23-NOV-19	R4921842
Silver (Ag)-Total	0.000015		0.000010	mg/L		23-NOV-19	R4921842
Sodium (Na)-Total	5.15		0.050	mg/L		23-NOV-19	R4921842
Strontium (Sr)-Total	0.510		0.00020	mg/L		23-NOV-19	R4921842
Thallium (Tl)-Total	0.000027		0.000010	mg/L		23-NOV-19	R4921842
Tin (Sn)-Total	0.00012		0.00010	mg/L		23-NOV-19	R4921842
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Uranium (U)-Total	0.00311		0.000010	mg/L		23-NOV-19	R4921842
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Zinc (Zn)-Total	0.0103		0.0030	mg/L		23-NOV-19	R4921842
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.4		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	301		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Total (as CaCO3)	301		1.0	mg/L		25-NOV-19	R4923509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		22-NOV-19	R4921410
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-NOV-19	R4921810
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		21-NOV-19	R4921810
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	988		2.0	uS/cm		25-NOV-19	R4923509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.50	DLHC	0.10	mg/L		21-NOV-19	R4921810
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.7			%		28-NOV-19	
Anion Sum	12.4			meq/L		28-NOV-19	
Cation Sum	12.3			meq/L		28-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.5		-100	%		28-NOV-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-1 GH_MW-GHC-1A_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 13:20 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.101	DLHC	0.025	mg/L		21-NOV-19	R4921810
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-NOV-19	R4921810
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0038		0.0010	mg/L		21-NOV-19	R4920017
<b>Oxidation redution potential by elect.</b> ORP	501		-1000	mV		22-NOV-19	R4921776
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0120		0.0020	mg/L		22-NOV-19	R4921329
<b>Sulfate in Water by IC</b> Sulfate (SO4)	307	DLHC	1.5	mg/L		21-NOV-19	R4921810
<b>Total Dissolved Solids</b> Total Dissolved Solids	781		20	mg/L		22-NOV-19	R4922588
<b>Total Suspended Solids</b> Total Suspended Solids	4.4		1.0	mg/L		21-NOV-19	R4920850
<b>Turbidity</b> Turbidity	6.02		0.10	NTU		21-NOV-19	R4920627
<b>pH</b> pH	7.90		0.10	pH		25-NOV-19	R4923509
L2385871-2 GH_MW-GHC-1B_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:30 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.68		0.50	mg/L		22-NOV-19	R4921791
Total Kjeldahl Nitrogen	0.096		0.050	mg/L		23-NOV-19	R4921895
Mercury (Hg)-Total	0.00055		0.00050	ug/L		26-NOV-19	R4925446
Total Organic Carbon	1.63		0.50	mg/L		22-NOV-19	R4921791
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-19	23-NOV-19	R4921842
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-NOV-19	24-NOV-19	R4922147
Dissolved Mercury Filtration Location	FIELD					23-NOV-19	R4921982
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-19	23-NOV-19	R4921842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Arsenic (As)-Dissolved	0.00105		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Barium (Ba)-Dissolved	0.0292		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Boron (B)-Dissolved	0.041		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cadmium (Cd)-Dissolved	0.0201		0.0050	ug/L	22-NOV-19	23-NOV-19	R4921842
Calcium (Ca)-Dissolved	229		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cobalt (Co)-Dissolved	0.44		0.10	ug/L	22-NOV-19	23-NOV-19	R4921842
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Iron (Fe)-Dissolved	0.628		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Lithium (Li)-Dissolved	0.0220		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
Magnesium (Mg)-Dissolved	63.6		0.10	mg/L	22-NOV-19	23-NOV-19	R4921842

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-2 GH_MW-GHC-1B_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 12:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.216		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Molybdenum (Mo)-Dissolved	0.000976		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Nickel (Ni)-Dissolved	0.00147		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Potassium (K)-Dissolved	2.18		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Selenium (Se)-Dissolved	0.073		0.050	ug/L	22-NOV-19	23-NOV-19	R4921842
Silicon (Si)-Dissolved	6.23		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Sodium (Na)-Dissolved	5.23		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Strontium (Sr)-Dissolved	0.705		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Uranium (U)-Dissolved	0.00181		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Zinc (Zn)-Dissolved	0.0018		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
<b>Hardness</b>							
Hardness (as CaCO3)	834		0.50	mg/L		25-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-NOV-19	R4921842
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0387		0.0030	mg/L		23-NOV-19	R4921842
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Arsenic (As)-Total	0.00119		0.00010	mg/L		23-NOV-19	R4921842
Barium (Ba)-Total	0.0317		0.00010	mg/L		23-NOV-19	R4921842
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Boron (B)-Total	0.044		0.010	mg/L		23-NOV-19	R4921842
Cadmium (Cd)-Total	0.0296		0.0050	ug/L		23-NOV-19	R4921842
Calcium (Ca)-Total	233		0.050	mg/L		23-NOV-19	R4921842
Chromium (Cr)-Total	0.00013		0.00010	mg/L		23-NOV-19	R4921842
Cobalt (Co)-Total	0.47		0.10	ug/L		23-NOV-19	R4921842
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Iron (Fe)-Total	0.827		0.010	mg/L		23-NOV-19	R4921842
Lead (Pb)-Total	0.000087		0.000050	mg/L		23-NOV-19	R4921842
Lithium (Li)-Total	0.0225		0.0010	mg/L		23-NOV-19	R4921842
Magnesium (Mg)-Total	63.3		0.10	mg/L		23-NOV-19	R4921842
Manganese (Mn)-Total	0.217		0.00010	mg/L		23-NOV-19	R4921842
Molybdenum (Mo)-Total	0.00103		0.000050	mg/L		23-NOV-19	R4921842
Nickel (Ni)-Total	0.00175		0.00050	mg/L		23-NOV-19	R4921842
Potassium (K)-Total	2.15		0.050	mg/L		23-NOV-19	R4921842
Selenium (Se)-Total	0.064		0.050	ug/L		23-NOV-19	R4921842
Silicon (Si)-Total	6.49		0.10	mg/L		23-NOV-19	R4921842
Silver (Ag)-Total	0.000033		0.000010	mg/L		23-NOV-19	R4921842
Sodium (Na)-Total	5.15		0.050	mg/L		23-NOV-19	R4921842
Strontium (Sr)-Total	0.728		0.00020	mg/L		23-NOV-19	R4921842
Thallium (Tl)-Total	0.000016		0.000010	mg/L		23-NOV-19	R4921842
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Uranium (U)-Total	0.00185		0.000010	mg/L		23-NOV-19	R4921842
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-NOV-19	R4921842
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-2 GH_MW-GHC-1B_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:30 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.7		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	260		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Total (as CaCO3)	260		1.0	mg/L		25-NOV-19	R4923509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0200		0.0050	mg/L		22-NOV-19	R4921410
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-NOV-19	R4921810
<b>Chloride in Water by IC</b>							
Chloride (Cl)	8.6	DLHC	2.5	mg/L		21-NOV-19	R4921810
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1330		2.0	uS/cm		25-NOV-19	R4923509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		21-NOV-19	R4921810
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.0			%		28-NOV-19	
Anion Sum	17.3			meq/L		28-NOV-19	
Cation Sum	17.0			meq/L		28-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.1		-100	%		28-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		21-NOV-19	R4921810
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-NOV-19	R4921810
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-NOV-19	R4920017
<b>Oxidation redution potential by elect.</b>							
ORP	396		-1000	mV		22-NOV-19	R4921776
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0061		0.0020	mg/L		22-NOV-19	R4921329
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	570	DLHC	1.5	mg/L		21-NOV-19	R4921810
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1140		20	mg/L		22-NOV-19	R4922588
<b>Total Suspended Solids</b>							
Total Suspended Solids	7.1		1.0	mg/L		21-NOV-19	R4920850
<b>Turbidity</b>							
Turbidity	6.14		0.10	NTU		21-NOV-19	R4920627
<b>pH</b>							
pH	7.91		0.10	pH		25-NOV-19	R4923509
L2385871-3 GH_GWB1_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-19	R4921791
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-NOV-19	R4921895
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-NOV-19	R4925446
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-19	R4921791
<b>Dissolved Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-3 GH_GWB1_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 12:00							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-19	23-NOV-19	R4921842
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-19	24-NOV-19	R4922147
Dissolved Mercury Filtration Location	FIELD					23-NOV-19	R4921982
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-19	23-NOV-19	R4921842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Boron (B)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	22-NOV-19	23-NOV-19	R4921842
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-NOV-19	23-NOV-19	R4921842
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	22-NOV-19	23-NOV-19	R4921842
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Potassium (K)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	22-NOV-19	23-NOV-19	R4921842
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		25-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-NOV-19	R4921842
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		23-NOV-19	R4921842
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Arsenic (As)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Barium (Ba)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Boron (B)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		23-NOV-19	R4921842
Calcium (Ca)-Total	<0.050		0.050	mg/L		23-NOV-19	R4921842
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-3 GH_GWB1_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Total	<0.10		0.10	ug/L		23-NOV-19	R4921842
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Iron (Fe)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Lead (Pb)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Lithium (Li)-Total	<0.0010		0.0010	mg/L		23-NOV-19	R4921842
Magnesium (Mg)-Total	<0.10		0.10	mg/L		23-NOV-19	R4921842
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Potassium (K)-Total	<0.050		0.050	mg/L		23-NOV-19	R4921842
Selenium (Se)-Total	<0.050		0.050	ug/L		23-NOV-19	R4921842
Silicon (Si)-Total	<0.10		0.10	mg/L		23-NOV-19	R4921842
Silver (Ag)-Total	<0.000010		0.000010	mg/L		23-NOV-19	R4921842
Sodium (Na)-Total	<0.050		0.050	mg/L		23-NOV-19	R4921842
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		23-NOV-19	R4921842
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		23-NOV-19	R4921842
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Uranium (U)-Total	<0.000010		0.000010	mg/L		23-NOV-19	R4921842
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-NOV-19	R4921842
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		22-NOV-19	R4921410
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		21-NOV-19	R4921810
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		21-NOV-19	R4921810
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		25-NOV-19	R4923509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4921810
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-NOV-19	
Anion Sum	<0.10			meq/L		28-NOV-19	
Cation Sum	<0.10			meq/L		28-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		28-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921810
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4921810
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-NOV-19	R4920017
<b>Oxidation redution potential by elect.</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-3 GH_GWB1_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:00 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	460		-1000	mV		22-NOV-19	R4921776
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		22-NOV-19	R4921329
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		21-NOV-19	R4921810
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		22-NOV-19	R4922588
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		21-NOV-19	R4920850
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		21-NOV-19	R4920627
<b>pH</b> pH	5.25		0.10	pH		25-NOV-19	R4923509
L2385871-4 GH_GWD1_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.57		0.50	mg/L		22-NOV-19	R4921791
Total Kjeldahl Nitrogen	0.084		0.050	mg/L		23-NOV-19	R4921895
Mercury (Hg)-Total	0.00050		0.00050	ug/L		26-NOV-19	R4925446
Total Organic Carbon	1.62		0.50	mg/L		22-NOV-19	R4921791
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-19	23-NOV-19	R4921842
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	23-NOV-19	24-NOV-19	R4922147
Dissolved Mercury Filtration Location	FIELD					23-NOV-19	R4921982
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-19	23-NOV-19	R4921842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Arsenic (As)-Dissolved	0.00110		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Barium (Ba)-Dissolved	0.0285		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Boron (B)-Dissolved	0.041		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cadmium (Cd)-Dissolved	0.0264		0.0050	ug/L	22-NOV-19	23-NOV-19	R4921842
Calcium (Ca)-Dissolved	225		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cobalt (Co)-Dissolved	0.44		0.10	ug/L	22-NOV-19	23-NOV-19	R4921842
Copper (Cu)-Dissolved	0.00047		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Iron (Fe)-Dissolved	0.617		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Lithium (Li)-Dissolved	0.0222		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
Magnesium (Mg)-Dissolved	64.3		0.10	mg/L	22-NOV-19	23-NOV-19	R4921842
Manganese (Mn)-Dissolved	0.216		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Molybdenum (Mo)-Dissolved	0.000994		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Nickel (Ni)-Dissolved	0.00149		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Potassium (K)-Dissolved	2.15		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Selenium (Se)-Dissolved	0.071		0.050	ug/L	22-NOV-19	23-NOV-19	R4921842
Silicon (Si)-Dissolved	6.20		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-4 GH_GWD1_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Sodium (Na)-Dissolved	5.16		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Strontium (Sr)-Dissolved	0.704		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Thallium (Tl)-Dissolved	0.000012		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Uranium (U)-Dissolved	0.00186		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Zinc (Zn)-Dissolved	0.0020		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
<b>Hardness</b>							
Hardness (as CaCO3)	826		0.50	mg/L		25-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		23-NOV-19	R4921842
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0495		0.0030	mg/L		23-NOV-19	R4921842
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Arsenic (As)-Total	0.00111		0.00010	mg/L		23-NOV-19	R4921842
Barium (Ba)-Total	0.0313		0.00010	mg/L		23-NOV-19	R4921842
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		23-NOV-19	R4921842
Boron (B)-Total	0.045		0.010	mg/L		23-NOV-19	R4921842
Cadmium (Cd)-Total	0.0275		0.0050	ug/L		23-NOV-19	R4921842
Calcium (Ca)-Total	234		0.050	mg/L		23-NOV-19	R4921842
Chromium (Cr)-Total	0.00011		0.00010	mg/L		23-NOV-19	R4921842
Cobalt (Co)-Total	0.47		0.10	ug/L		23-NOV-19	R4921842
Copper (Cu)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Iron (Fe)-Total	0.802		0.010	mg/L		23-NOV-19	R4921842
Lead (Pb)-Total	0.000107		0.000050	mg/L		23-NOV-19	R4921842
Lithium (Li)-Total	0.0231		0.0010	mg/L		23-NOV-19	R4921842
Magnesium (Mg)-Total	62.9		0.10	mg/L		23-NOV-19	R4921842
Manganese (Mn)-Total	0.222		0.00010	mg/L		23-NOV-19	R4921842
Molybdenum (Mo)-Total	0.00105		0.000050	mg/L		23-NOV-19	R4921842
Nickel (Ni)-Total	0.00159		0.00050	mg/L		23-NOV-19	R4921842
Potassium (K)-Total	2.18		0.050	mg/L		23-NOV-19	R4921842
Selenium (Se)-Total	0.105		0.050	ug/L		23-NOV-19	R4921842
Silicon (Si)-Total	6.53		0.10	mg/L		23-NOV-19	R4921842
Silver (Ag)-Total	<0.000010		0.000010	mg/L		23-NOV-19	R4921842
Sodium (Na)-Total	5.24		0.050	mg/L		23-NOV-19	R4921842
Strontium (Sr)-Total	0.727		0.00020	mg/L		23-NOV-19	R4921842
Thallium (Tl)-Total	0.000017		0.000010	mg/L		23-NOV-19	R4921842
Tin (Sn)-Total	<0.00010		0.00010	mg/L		23-NOV-19	R4921842
Titanium (Ti)-Total	<0.010		0.010	mg/L		23-NOV-19	R4921842
Uranium (U)-Total	0.00196		0.000010	mg/L		23-NOV-19	R4921842
Vanadium (V)-Total	<0.00050		0.00050	mg/L		23-NOV-19	R4921842
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		23-NOV-19	R4921842
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.9		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	269		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-4 GH_GWD1_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 12:00 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	269		1.0	mg/L		25-NOV-19	R4923509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0203		0.0050	mg/L		22-NOV-19	R4921410
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		21-NOV-19	R4921810
<b>Chloride in Water by IC</b>							
Chloride (Cl)	8.9	DLHC	2.5	mg/L		21-NOV-19	R4921810
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1330		2.0	uS/cm		25-NOV-19	R4923509
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		21-NOV-19	R4921810
<b>Ion Balance Calculation</b>							
Ion Balance	95.8		-100	%		28-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.1			%		28-NOV-19	
Anion Sum	17.6			meq/L		28-NOV-19	
Cation Sum	16.8			meq/L		28-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		21-NOV-19	R4921810
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		21-NOV-19	R4921810
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-NOV-19	R4920017
<b>Oxidation reduction potential by elect.</b>							
ORP	461		-1000	mV		22-NOV-19	R4921776
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0049		0.0020	mg/L		22-NOV-19	R4921329
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	573	DLHC	1.5	mg/L		21-NOV-19	R4921810
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1130		20	mg/L		22-NOV-19	R4922588
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.3		1.0	mg/L		21-NOV-19	R4920850
<b>Turbidity</b>							
Turbidity	4.91		0.10	NTU		21-NOV-19	R4920627
<b>pH</b>							
pH	7.79		0.10	pH		25-NOV-19	R4923509
L2385871-5 GH_TRIPGW_WG_2019-10-01_NP Sampled By: CLIENT on 20-NOV-19 @ 13:40 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		22-NOV-19	R4921791
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		23-NOV-19	R4921895
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		26-NOV-19	R4925446
Total Organic Carbon	<0.50		0.50	mg/L		22-NOV-19	R4921791
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	22-NOV-19	23-NOV-19	R4921842
Dissolved Metals Filtration Location	FIELD					22-NOV-19	R4921475
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	23-NOV-19	24-NOV-19	R4922147

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-5 GH_TRIPGW_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 13:40							
Matrix: WG							
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Dissolved Mercury Filtration Location	FIELD					23-NOV-19	R4921982
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-NOV-19	R4923786
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	22-NOV-19	23-NOV-19	R4921842
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Boron (B)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	22-NOV-19	23-NOV-19	R4921842
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	22-NOV-19	23-NOV-19	R4921842
Copper (Cu)-Dissolved	0.00053	RRV	0.00020	mg/L	26-NOV-19	26-NOV-19	R4924052
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	22-NOV-19	23-NOV-19	R4921842
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	22-NOV-19	23-NOV-19	R4921842
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Potassium (K)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	22-NOV-19	23-NOV-19	R4921842
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	22-NOV-19	23-NOV-19	R4921842
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	22-NOV-19	23-NOV-19	R4921842
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	22-NOV-19	23-NOV-19	R4921842
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	22-NOV-19	23-NOV-19	R4921842
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	22-NOV-19	23-NOV-19	R4921842
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	22-NOV-19	23-NOV-19	R4921842
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	22-NOV-19	23-NOV-19	R4921842
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		26-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.6		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		25-NOV-19	R4923509
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0223	RRV	0.0050	mg/L		22-NOV-19	R4921410
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		21-NOV-19	R4921810
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		21-NOV-19	R4921810
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		25-NOV-19	R4923509
<b>Fluoride in Water by IC</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2385871-5 GH_TRIPGW_WG_2019-10-01_NP							
Sampled By: CLIENT on 20-NOV-19 @ 13:40							
Matrix: WG							
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		21-NOV-19	R4921810
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-NOV-19	
Anion Sum	<0.10			meq/L		28-NOV-19	
Cation Sum	<0.10			meq/L		28-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		28-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		21-NOV-19	R4921810
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		21-NOV-19	R4921810
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		21-NOV-19	R4920017
<b>Oxidation redution potential by elect.</b>							
ORP	460		-1000	mV		22-NOV-19	R4921776
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		22-NOV-19	R4921329
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		21-NOV-19	R4921810
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		22-NOV-19	R4922588
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		21-NOV-19	R4920850
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		21-NOV-19	R4920627
<b>pH</b>							
pH	5.13		0.10	pH		25-NOV-19	R4923509

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-10

## GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 1 of 13

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926867</b>							
<b>WG3229600-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			110.7		%		85-115	27-NOV-19
<b>WG3229600-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			105.4		%		85-115	27-NOV-19
<b>WG3229600-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	27-NOV-19
<b>WG3229600-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	27-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4923509</b>							
<b>WG3228260-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.2		%		85-115	25-NOV-19
<b>WG3228260-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.8		%		85-115	25-NOV-19
<b>WG3228260-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-NOV-19
<b>WG3228260-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226117-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.4		%		80-120	23-NOV-19
<b>WG3226117-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-NOV-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226373-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			104.6		%		80-120	23-NOV-19
<b>WG3226373-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	23-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921810</b>							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Bromide (Br)			107.0		%		85-115	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R4921810							
<b>WG3226561-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Bromide (Br)			111.5		%		75-125	21-NOV-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4921791							
<b>WG3226554-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.1		%		80-120	22-NOV-19
<b>WG3226554-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4921791							
<b>WG3226554-2</b>	<b>LCS</b>							
Total Organic Carbon			103.8		%		80-120	22-NOV-19
<b>WG3226554-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	22-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4921810							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Chloride (Cl)			99.97		%		90-110	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Chloride (Cl)			102.5		%		75-125	21-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4923509							
<b>WG3228260-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.2		%		90-110	25-NOV-19
<b>WG3228260-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.6		%		90-110	25-NOV-19
<b>WG3228260-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-NOV-19
<b>WG3228260-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4921810</b>							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Fluoride (F)			103.3		%		90-110	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Fluoride (F)			110.9		%		75-125	21-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4922147</b>							
<b>WG3226700-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.5		%		80-120	24-NOV-19
<b>WG3226700-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-NOV-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4925446</b>							
<b>WG3228605-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.4		%		80-120	26-NOV-19
<b>WG3228605-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	26-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226117-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.3		%		80-120	23-NOV-19
Antimony (Sb)-Dissolved			93.8		%		80-120	23-NOV-19
Arsenic (As)-Dissolved			94.2		%		80-120	23-NOV-19
Barium (Ba)-Dissolved			94.3		%		80-120	23-NOV-19
Bismuth (Bi)-Dissolved			95.8		%		80-120	23-NOV-19
Boron (B)-Dissolved			94.5		%		80-120	23-NOV-19
Cadmium (Cd)-Dissolved			92.1		%		80-120	23-NOV-19
Calcium (Ca)-Dissolved			96.8		%		80-120	23-NOV-19
Chromium (Cr)-Dissolved			93.4		%		80-120	23-NOV-19
Cobalt (Co)-Dissolved			94.9		%		80-120	23-NOV-19
Copper (Cu)-Dissolved			94.1		%		80-120	23-NOV-19
Iron (Fe)-Dissolved			94.5		%		80-120	23-NOV-19
Lead (Pb)-Dissolved			95.9		%		80-120	23-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226117-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			94.2		%		80-120	23-NOV-19
Magnesium (Mg)-Dissolved			92.7		%		80-120	23-NOV-19
Manganese (Mn)-Dissolved			97.0		%		80-120	23-NOV-19
Molybdenum (Mo)-Dissolved			99.0		%		80-120	23-NOV-19
Nickel (Ni)-Dissolved			95.0		%		80-120	23-NOV-19
Potassium (K)-Dissolved			96.2		%		80-120	23-NOV-19
Selenium (Se)-Dissolved			89.3		%		80-120	23-NOV-19
Silicon (Si)-Dissolved			97.4		%		60-140	23-NOV-19
Silver (Ag)-Dissolved			95.0		%		80-120	23-NOV-19
Sodium (Na)-Dissolved			98.5		%		80-120	23-NOV-19
Strontium (Sr)-Dissolved			101.9		%		80-120	23-NOV-19
Thallium (Tl)-Dissolved			96.7		%		80-120	23-NOV-19
Tin (Sn)-Dissolved			93.0		%		80-120	23-NOV-19
Titanium (Ti)-Dissolved			88.3		%		80-120	23-NOV-19
Uranium (U)-Dissolved			100.4		%		80-120	23-NOV-19
Vanadium (V)-Dissolved			97.3		%		80-120	23-NOV-19
Zinc (Zn)-Dissolved			89.5		%		80-120	23-NOV-19
<b>WG3226117-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226117-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-NOV-19
<b>Batch</b>	<b>R4924052</b>							
<b>WG3228531-6</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.7		%		80-120	26-NOV-19
Antimony (Sb)-Dissolved			95.2		%		80-120	26-NOV-19
Arsenic (As)-Dissolved			93.6		%		80-120	26-NOV-19
Barium (Ba)-Dissolved			94.7		%		80-120	26-NOV-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	26-NOV-19
Boron (B)-Dissolved			100.9		%		80-120	26-NOV-19
Cadmium (Cd)-Dissolved			93.3		%		80-120	26-NOV-19
Calcium (Ca)-Dissolved			99.5		%		80-120	26-NOV-19
Chromium (Cr)-Dissolved			94.6		%		80-120	26-NOV-19
Cobalt (Co)-Dissolved			95.1		%		80-120	26-NOV-19
Copper (Cu)-Dissolved			92.9		%		80-120	26-NOV-19
Iron (Fe)-Dissolved			93.8		%		80-120	26-NOV-19
Lead (Pb)-Dissolved			97.2		%		80-120	26-NOV-19
Lithium (Li)-Dissolved			96.1		%		80-120	26-NOV-19
Magnesium (Mg)-Dissolved			94.6		%		80-120	26-NOV-19
Manganese (Mn)-Dissolved			93.0		%		80-120	26-NOV-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	26-NOV-19
Nickel (Ni)-Dissolved			94.8		%		80-120	26-NOV-19





## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4924052</b>							
<b>WG3228531-6</b>	<b>LCS</b>							
Potassium (K)-Dissolved			94.9		%		80-120	26-NOV-19
Selenium (Se)-Dissolved			97.3		%		80-120	26-NOV-19
Silicon (Si)-Dissolved			102.3		%		60-140	26-NOV-19
Silver (Ag)-Dissolved			94.2		%		80-120	26-NOV-19
Sodium (Na)-Dissolved			95.3		%		80-120	26-NOV-19
Strontium (Sr)-Dissolved			95.8		%		80-120	26-NOV-19
Thallium (Tl)-Dissolved			94.3		%		80-120	26-NOV-19
Tin (Sn)-Dissolved			95.1		%		80-120	26-NOV-19
Titanium (Ti)-Dissolved			88.8		%		80-120	26-NOV-19
Uranium (U)-Dissolved			100.7		%		80-120	26-NOV-19
Vanadium (V)-Dissolved			95.1		%		80-120	26-NOV-19
Zinc (Zn)-Dissolved			96.2		%		80-120	26-NOV-19
<b>WG3228531-5</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4924052</b>							
<b>WG3228531-5</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-NOV-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226373-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			107.3		%		80-120	23-NOV-19
Antimony (Sb)-Total			113.5		%		80-120	23-NOV-19
Arsenic (As)-Total			105.0		%		80-120	23-NOV-19
Barium (Ba)-Total			104.2		%		80-120	23-NOV-19
Bismuth (Bi)-Total			111.9		%		80-120	23-NOV-19
Boron (B)-Total			100.7		%		80-120	23-NOV-19
Cadmium (Cd)-Total			101.0		%		80-120	23-NOV-19
Calcium (Ca)-Total			105.1		%		80-120	23-NOV-19
Chromium (Cr)-Total			106.2		%		80-120	23-NOV-19
Cobalt (Co)-Total			106.2		%		80-120	23-NOV-19
Copper (Cu)-Total			104.5		%		80-120	23-NOV-19
Iron (Fe)-Total			99.3		%		80-120	23-NOV-19
Lead (Pb)-Total			108.6		%		80-120	23-NOV-19
Lithium (Li)-Total			102.4		%		80-120	23-NOV-19
Magnesium (Mg)-Total			104.8		%		80-120	23-NOV-19
Manganese (Mn)-Total			104.6		%		80-120	23-NOV-19
Molybdenum (Mo)-Total			110.7		%		80-120	23-NOV-19
Nickel (Ni)-Total			105.1		%		80-120	23-NOV-19
Potassium (K)-Total			106.5		%		80-120	23-NOV-19
Selenium (Se)-Total			99.6		%		80-120	23-NOV-19
Silicon (Si)-Total			102.0		%		80-120	23-NOV-19
Silver (Ag)-Total			106.9		%		80-120	23-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226373-2 LCS</b>								
Sodium (Na)-Total			108.6		%		80-120	23-NOV-19
Strontium (Sr)-Total			113.5		%		80-120	23-NOV-19
Thallium (Tl)-Total			109.2		%		80-120	23-NOV-19
Tin (Sn)-Total			102.9		%		80-120	23-NOV-19
Titanium (Ti)-Total			98.9		%		80-120	23-NOV-19
Uranium (U)-Total			116.0		%		80-120	23-NOV-19
Vanadium (V)-Total			105.7		%		80-120	23-NOV-19
Zinc (Zn)-Total			105.1		%		80-120	23-NOV-19
<b>WG3226373-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	23-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	23-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	23-NOV-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	23-NOV-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	23-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	23-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	23-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	23-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	23-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	23-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	23-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	23-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	23-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	23-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	23-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	23-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	23-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	23-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	23-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921842</b>							
<b>WG3226373-1</b>	<b>MB</b>							
Tin (Sn)-Total			<0.00010		mg/L		0.0001	23-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	23-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	23-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	23-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	23-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921410</b>							
<b>WG3226020-2</b>	<b>LCS</b>							
Ammonia as N			101.7		%		85-115	22-NOV-19
<b>WG3226020-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	22-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921810</b>							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Nitrite (as N)			102.3		%		90-110	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Nitrite (as N)			104.6		%		75-125	21-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921810</b>							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Nitrate (as N)		<0.0050	0.0054	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Nitrate (as N)			100.2		%		90-110	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Nitrate (as N)			102.6		%		75-125	21-NOV-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921776</b>							
<b>WG3226063-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	22-NOV-19



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4921329							
<b>WG3225863-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			89.7		%		80-120	22-NOV-19
<b>WG3225863-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	22-NOV-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4923509							
<b>WG3228260-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	25-NOV-19
<b>WG3228260-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	25-NOV-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4920017							
<b>WG3225093-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.5		%		80-120	21-NOV-19
<b>WG3225093-7</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	21-NOV-19
<b>WG3225093-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-NOV-19
<b>WG3225093-2</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4921810							
<b>WG3226561-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3226561-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.1		%		90-110	21-NOV-19
<b>WG3226561-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	21-NOV-19
<b>WG3226561-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Sulfate (SO4)			102.7		%		75-125	21-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4922588							
<b>WG3225678-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.6		%		85-115	22-NOV-19
<b>WG3225678-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	22-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4921895</b>							
<b>WG3226566-3</b>	<b>DUP</b>	<b>L2385871-5</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	23-NOV-19
<b>WG3226566-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.4		%		75-125	23-NOV-19
<b>WG3226566-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-NOV-19
<b>WG3226566-4</b>	<b>MS</b>	<b>L2385871-5</b>						
Total Kjeldahl Nitrogen			111.8		%		70-130	23-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4920850</b>							
<b>WG3224850-6</b>	<b>LCS</b>							
Total Suspended Solids			92.3		%		85-115	21-NOV-19
<b>WG3224850-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	21-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4920627</b>							
<b>WG3225162-11</b>	<b>LCS</b>							
Turbidity			94.0		%		85-115	21-NOV-19
<b>WG3225162-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-NOV-19

# Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2385871

Report Date: 28-NOV-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	20-NOV-19 13:20	22-NOV-19 12:30	0.25	47	hours	EHTR-FM
	2	20-NOV-19 12:30	22-NOV-19 12:30	0.25	48	hours	EHTR-FM
	3	20-NOV-19 12:00	22-NOV-19 12:30	0.25	48	hours	EHTR-FM
	4	20-NOV-19 12:00	22-NOV-19 12:30	0.25	48	hours	EHTR-FM
	5	20-NOV-19 13:40	22-NOV-19 12:30	0.25	47	hours	EHTR-FM
pH	1	20-NOV-19 13:20	25-NOV-19 11:00	0.25	118	hours	EHTR-FM
	2	20-NOV-19 12:30	25-NOV-19 11:00	0.25	119	hours	EHTR-FM
	3	20-NOV-19 12:00	25-NOV-19 11:00	0.25	119	hours	EHTR-FM
	4	20-NOV-19 12:00	25-NOV-19 11:00	0.25	119	hours	EHTR-FM
	5	20-NOV-19 13:40	25-NOV-19 11:00	0.25	117	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2385871 were received on 21-NOV-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> GHO_QTR_GW_2019-10-01		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job# Greenhills Operation		Lab Name ALS Calgary			Report Format / Distribution			Excl	PDF	EDD		
Project Manager Jenni Kropp		Lab Contact Lyudmyta Shvets			Email 1: Leigh.Stickney			X	X	X		
Email jennifer.kropp@teck.com		Email Lyudmyta.Shvets@ALSGlobal.com			Email 2: jennifer.kropp@teck.com			X	X	X		
Address P.O. BOX 5000		Address 2559 29 Street NE			Email 3: teckcoal@egulsonline.com					X		
City Etkford		Province BC	City Calgary			Province AB	Email 4: jaydon.francis@teck.com			X	X	X
Postal Code V0B1H0		Country Canada	Postal Code T1Y 7B5			Country Canada	Email 5: Brendan.Peachey@teck.com			X	X	X
Phone Number 250-865-3048		Phone Number 403 407 1794			PO number 610013							

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA
GH_MW-GHC-1A_WG_2019-10-01_NP	GH_MW-GHC-1A	WG		2019/11/20	13:20	G	7	1	1	1	1	1	1	1
GH_MW-GHC-1B_WG_2019-10-01_NP	GH_MW-GHC-1B	WG		2019/11/20	12:30	G	7	1	1	1	1	1	1	1
GH_GWBI_WG_2019-10-01_NP	GH_GWBI	WG		2019/11/20		G	7	1	1	1	1	1	1	1
GH_GWDI_WG_2019-10-01_NP	GH_GWDI	WG		2019/11/20		G	7	1	1	1	1	1	1	1
GH_TRIPGW_WG_2019-10-01_NP	GH_TRIPGW	WG		2019/11/20	13:40	G	6	1	1	1	1	1	1	1

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	11/21/19

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>	<b>Mobile #</b>
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	<i>[Signature]</i>	
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS		<b>Date/Time</b>

COC ID: **GHO\_QTR\_GW\_2019-10-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	leigh.stickney	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	jennifer.kropp@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
								Email 4:	jaydon.francis@teck.com	X	X	X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 5:	Brendan.Peachey@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	DL-Equis-GHO-Feld@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

**SAMPLE DETAILS**



L2385871-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
GH_MW-GHC-1A_WG_2019-10-01_NP	GH_MW-GHC-1A	WG		2019/11/20	13:20	G	7
GH_MW-GHC-1B_WG_2019-10-01_NP	GH_MW-GHC-1B	WG		2019/11/20	12:30	G	7
GH_GWB1_WG_2019-10-01_NP	GH_GWB1	WG		2019/11/20		G	7
GH_GWD1_WG_2019-10-01_NP	GH_GWD1	WG		2019/11/20		G	7
GH_TRIPGW_WG_2019-10-01_NP	GH_TRIPGW	WG		2019/11/20	13:40	G	6

**ANALYSIS REQUESTED**

Y	N	Y	N	Y	N	N							
NONE	H2SO4	HCL	NONE	NONE	NONE	HNO3							
ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA							
1	1	1	1	1	1	1							
1	1	1	1	1	1	1							
1	1	1	1	1	1	1							
1	1	1	1	1	1	1							

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*[Handwritten signature]* *11/21/20*

**SERVICE REQUEST (rush=subject to availability)**

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Mobile #

Sampler's Signature

Date/Time

*[Handwritten signature]*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 26-NOV-19  
Report Date: 03-DEC-19 16:24 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2387862  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-10  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-1 GH_MW-UTC-1B_WG_2019-10-01_NP							
Sampled By: CLIENT on 25-NOV-19 @ 14:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.66		0.50	mg/L		27-NOV-19	R4927788
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-NOV-19	R4927113
Mercury (Hg)-Total	0.00068		0.00050	ug/L		29-NOV-19	R4928921
Total Organic Carbon	0.92		0.50	mg/L		27-NOV-19	R4927788
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-NOV-19	29-NOV-19	R4928726
Dissolved Metals Filtration Location	FIELD					29-NOV-19	R4928556
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-19	28-NOV-19	R4927420
Dissolved Mercury Filtration Location	FIELD					28-NOV-19	R4927614
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					29-NOV-19	R4928556
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-NOV-19	29-NOV-19	R4928726
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Arsenic (As)-Dissolved	0.00014		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Barium (Ba)-Dissolved	0.0733		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Boron (B)-Dissolved	0.083		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cadmium (Cd)-Dissolved	0.0082		0.0050	ug/L	29-NOV-19	29-NOV-19	R4928726
Calcium (Ca)-Dissolved	60.7		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-NOV-19	29-NOV-19	R4928726
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-NOV-19	29-NOV-19	R4928726
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Lithium (Li)-Dissolved	0.0344		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
Magnesium (Mg)-Dissolved	17.0		0.10	mg/L	29-NOV-19	29-NOV-19	R4928726
Manganese (Mn)-Dissolved	0.00556		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Molybdenum (Mo)-Dissolved	0.00146		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Potassium (K)-Dissolved	1.13		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Selenium (Se)-Dissolved	2.46		0.050	ug/L	29-NOV-19	29-NOV-19	R4928726
Silicon (Si)-Dissolved	4.28		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Sodium (Na)-Dissolved	13.7		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Strontium (Sr)-Dissolved	0.948		0.00020	mg/L	29-NOV-19	29-NOV-19	R4928726
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Uranium (U)-Dissolved	0.000295		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
<b>Hardness</b>							
Hardness (as CaCO3)	221		0.50	mg/L		29-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-NOV-19	R4928947
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.107		0.0030	mg/L		29-NOV-19	R4928947
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-1 GH_MW-UTC-1B_WG_2019-10-01_NP							
Sampled By: CLIENT on 25-NOV-19 @ 14:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00017		0.00010	mg/L		29-NOV-19	R4928947
Barium (Ba)-Total	0.0768		0.00010	mg/L		29-NOV-19	R4928947
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-NOV-19	R4928947
Boron (B)-Total	0.090		0.010	mg/L		29-NOV-19	R4928947
Cadmium (Cd)-Total	0.0165		0.0050	ug/L		29-NOV-19	R4928947
Calcium (Ca)-Total	61.5		0.050	mg/L		29-NOV-19	R4928947
Chromium (Cr)-Total	0.00033		0.00010	mg/L		29-NOV-19	R4928947
Cobalt (Co)-Total	0.11		0.10	ug/L		29-NOV-19	R4928947
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-NOV-19	R4928947
Iron (Fe)-Total	0.383		0.010	mg/L		29-NOV-19	R4928947
Lead (Pb)-Total	0.000129		0.000050	mg/L		29-NOV-19	R4928947
Lithium (Li)-Total	0.0361		0.0010	mg/L		29-NOV-19	R4928947
Magnesium (Mg)-Total	19.8		0.10	mg/L		29-NOV-19	R4928947
Manganese (Mn)-Total	0.0114		0.00010	mg/L		29-NOV-19	R4928947
Molybdenum (Mo)-Total	0.00136		0.000050	mg/L		29-NOV-19	R4928947
Nickel (Ni)-Total	0.00076		0.00050	mg/L		29-NOV-19	R4928947
Potassium (K)-Total	1.23		0.050	mg/L		29-NOV-19	R4928947
Selenium (Se)-Total	2.54		0.050	ug/L		29-NOV-19	R4928947
Silicon (Si)-Total	4.87		0.10	mg/L		29-NOV-19	R4928947
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-NOV-19	R4928947
Sodium (Na)-Total	15.5		0.050	mg/L		29-NOV-19	R4928947
Strontium (Sr)-Total	1.03		0.00020	mg/L		29-NOV-19	R4928947
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-NOV-19	R4928947
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-NOV-19	R4928947
Uranium (U)-Total	0.000316		0.000010	mg/L		29-NOV-19	R4928947
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-NOV-19	R4928947
Zinc (Zn)-Total	0.0057		0.0030	mg/L		29-NOV-19	R4928947
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	227		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Total (as CaCO3)	227		1.0	mg/L		27-NOV-19	R4927809
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0108		0.0050	mg/L		27-NOV-19	R4922870
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-19	R4926915
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.11		0.50	mg/L		26-NOV-19	R4926915
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	474		2.0	uS/cm		27-NOV-19	R4927809
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.196		0.020	mg/L		26-NOV-19	R4926915
<b>Ion Balance Calculation</b>							
Ion Balance	90.5		-100	%		29-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.0			%		29-NOV-19	
Anion Sum	5.58			meq/L		29-NOV-19	
Cation Sum	5.05			meq/L		29-NOV-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-1 GH_MW-UTC-1B_WG_2019-10-01_NP Sampled By: CLIENT on 25-NOV-19 @ 14:00 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.0450		0.0050	mg/L		26-NOV-19	R4926915
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-19	R4926915
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		26-NOV-19	R4925306
<b>Oxidation redution potential by elect.</b> ORP	464		-1000	mV		26-NOV-19	R4927295
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0064		0.0020	mg/L		28-NOV-19	R4928098
<b>Sulfate in Water by IC</b> Sulfate (SO4)	37.1		0.30	mg/L		26-NOV-19	R4926915
<b>Total Dissolved Solids</b> Total Dissolved Solids	279	DLHC	20	mg/L		27-NOV-19	R4927708
<b>Total Suspended Solids</b> Total Suspended Solids	5.2		1.0	mg/L		27-NOV-19	R4927767
<b>Turbidity</b> Turbidity	4.22		0.10	NTU		26-NOV-19	R4926706
<b>pH</b> pH	7.90		0.10	pH		27-NOV-19	R4927809
L2387862-2 GH_GWD3_WG_2019-10-01_NP Sampled By: CLIENT on 25-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.59		0.50	mg/L		27-NOV-19	R4927788
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-NOV-19	R4927113
Mercury (Hg)-Total	0.00085		0.00050	ug/L		29-NOV-19	R4928921
Total Organic Carbon	0.67		0.50	mg/L		27-NOV-19	R4927788
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-NOV-19	29-NOV-19	R4928726
Dissolved Metals Filtration Location	FIELD					29-NOV-19	R4928556
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-19	28-NOV-19	R4927420
Dissolved Mercury Filtration Location	FIELD					28-NOV-19	R4927614
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					29-NOV-19	R4928556
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-NOV-19	29-NOV-19	R4928726
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Barium (Ba)-Dissolved	0.0729		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Boron (B)-Dissolved	0.083		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cadmium (Cd)-Dissolved	0.0133		0.0050	ug/L	29-NOV-19	29-NOV-19	R4928726
Calcium (Ca)-Dissolved	60.9		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-NOV-19	29-NOV-19	R4928726
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	29-NOV-19	29-NOV-19	R4928726
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Lithium (Li)-Dissolved	0.0359		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
Magnesium (Mg)-Dissolved	17.2		0.10	mg/L	29-NOV-19	29-NOV-19	R4928726

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-2 GH_GWD3_WG_2019-10-01_NP							
Sampled By: CLIENT on 25-NOV-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.00528		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Molybdenum (Mo)-Dissolved	0.00140		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Potassium (K)-Dissolved	1.14		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Selenium (Se)-Dissolved	2.37		0.050	ug/L	29-NOV-19	29-NOV-19	R4928726
Silicon (Si)-Dissolved	4.52		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Sodium (Na)-Dissolved	14.0		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Strontium (Sr)-Dissolved	0.918		0.00020	mg/L	29-NOV-19	29-NOV-19	R4928726
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Uranium (U)-Dissolved	0.000286		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
<b>Hardness</b>							
Hardness (as CaCO3)	223		0.50	mg/L		29-NOV-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-NOV-19	R4928947
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.235		0.0030	mg/L		29-NOV-19	R4928947
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Arsenic (As)-Total	0.00025		0.00010	mg/L		29-NOV-19	R4928947
Barium (Ba)-Total	0.0875		0.00010	mg/L		29-NOV-19	R4928947
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-NOV-19	R4928947
Boron (B)-Total	0.092		0.010	mg/L		29-NOV-19	R4928947
Cadmium (Cd)-Total	0.0224		0.0050	ug/L		29-NOV-19	R4928947
Calcium (Ca)-Total	64.1		0.050	mg/L		29-NOV-19	R4928947
Chromium (Cr)-Total	0.00061		0.00010	mg/L		29-NOV-19	R4928947
Cobalt (Co)-Total	0.24		0.10	ug/L		29-NOV-19	R4928947
Copper (Cu)-Total	0.00087		0.00050	mg/L		29-NOV-19	R4928947
Iron (Fe)-Total	0.830		0.010	mg/L		29-NOV-19	R4928947
Lead (Pb)-Total	0.000282		0.000050	mg/L		29-NOV-19	R4928947
Lithium (Li)-Total	0.0366		0.0010	mg/L		29-NOV-19	R4928947
Magnesium (Mg)-Total	20.1		0.10	mg/L		29-NOV-19	R4928947
Manganese (Mn)-Total	0.0179		0.00010	mg/L		29-NOV-19	R4928947
Molybdenum (Mo)-Total	0.00141		0.000050	mg/L		29-NOV-19	R4928947
Nickel (Ni)-Total	0.00103		0.00050	mg/L		29-NOV-19	R4928947
Potassium (K)-Total	1.29		0.050	mg/L		29-NOV-19	R4928947
Selenium (Se)-Total	2.29		0.050	ug/L		29-NOV-19	R4928947
Silicon (Si)-Total	5.09		0.10	mg/L		29-NOV-19	R4928947
Silver (Ag)-Total	0.000010		0.000010	mg/L		29-NOV-19	R4928947
Sodium (Na)-Total	15.4		0.050	mg/L		29-NOV-19	R4928947
Strontium (Sr)-Total	1.05		0.00020	mg/L		29-NOV-19	R4928947
Thallium (Tl)-Total	0.000012		0.000010	mg/L		29-NOV-19	R4928947
Tin (Sn)-Total	0.00015		0.00010	mg/L		29-NOV-19	R4928947
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-NOV-19	R4928947
Uranium (U)-Total	0.000325		0.000010	mg/L		29-NOV-19	R4928947
Vanadium (V)-Total	0.00080		0.00050	mg/L		29-NOV-19	R4928947
Zinc (Zn)-Total	0.0098		0.0030	mg/L		29-NOV-19	R4928947
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-2 GH_GWD3_WG_2019-10-01_NP Sampled By: CLIENT on 25-NOV-19 @ 12:00 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	230		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Total (as CaCO3)	230		1.0	mg/L		27-NOV-19	R4927809
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0071		0.0050	mg/L		26-NOV-19	R4922870
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-19	R4926915
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.04		0.50	mg/L		26-NOV-19	R4926915
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	475		2.0	uS/cm		27-NOV-19	R4927809
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.180		0.020	mg/L		26-NOV-19	R4926915
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.1			%		29-NOV-19	
Anion Sum	5.64			meq/L		29-NOV-19	
Cation Sum	5.09			meq/L		29-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	90.3		-100	%		29-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0415		0.0050	mg/L		26-NOV-19	R4926915
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-19	R4926915
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		26-NOV-19	R4925306
<b>Oxidation redution potential by elect.</b>							
ORP	447		-1000	mV		26-NOV-19	R4927295
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0077		0.0020	mg/L		28-NOV-19	R4928098
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	37.0		0.30	mg/L		26-NOV-19	R4926915
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	293	DLHC	20	mg/L		27-NOV-19	R4927708
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.4		1.0	mg/L		27-NOV-19	R4927767
<b>Turbidity</b>							
Turbidity	4.86		0.10	NTU		26-NOV-19	R4926706
<b>pH</b>							
pH	7.94		0.10	pH		27-NOV-19	R4927809
L2387862-3 GH_GWB3_WG_2019-10-01_NP Sampled By: CLIENT on 25-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		27-NOV-19	R4927788
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		27-NOV-19	R4927113
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		29-NOV-19	R4928921
Total Organic Carbon	<0.50		0.50	mg/L		27-NOV-19	R4927788
<b>Dissolved Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-3 GH_GWB3_WG_2019-10-01_NP							
Sampled By: CLIENT on 25-NOV-19 @ 12:00							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	29-NOV-19	29-NOV-19	R4928726
Dissolved Metals Filtration Location	FIELD					29-NOV-19	R4928556
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-NOV-19	28-NOV-19	R4927420
Dissolved Mercury Filtration Location	FIELD					28-NOV-19	R4927614
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					30-NOV-19	R4929026
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	29-NOV-19	29-NOV-19	R4928726
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Boron (B)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	29-NOV-19	29-NOV-19	R4928726
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	29-NOV-19	29-NOV-19	R4928726
Copper (Cu)-Dissolved	0.00038	RRV	0.00020	mg/L	30-NOV-19	01-DEC-19	R4929893
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	29-NOV-19	29-NOV-19	R4928726
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	29-NOV-19	29-NOV-19	R4928726
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Potassium (K)-Dissolved	<0.050		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	29-NOV-19	29-NOV-19	R4928726
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	29-NOV-19	29-NOV-19	R4928726
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	29-NOV-19	29-NOV-19	R4928726
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	29-NOV-19	29-NOV-19	R4928726
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	29-NOV-19	29-NOV-19	R4928726
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	29-NOV-19	29-NOV-19	R4928726
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	29-NOV-19	29-NOV-19	R4928726
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	29-NOV-19	29-NOV-19	R4928726
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		02-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		29-NOV-19	R4928947
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		29-NOV-19	R4928947
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Arsenic (As)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Barium (Ba)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-NOV-19	R4928947
Boron (B)-Total	<0.010		0.010	mg/L		29-NOV-19	R4928947
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		01-DEC-19	R4929893
Calcium (Ca)-Total	<0.050		0.050	mg/L		29-NOV-19	R4928947
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-3 GH_GWB3_WG_2019-10-01_NP							
Sampled By: CLIENT on 25-NOV-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Total	<0.10		0.10	ug/L		29-NOV-19	R4928947
Copper (Cu)-Total	<0.00050		0.00050	mg/L		29-NOV-19	R4928947
Iron (Fe)-Total	<0.010		0.010	mg/L		29-NOV-19	R4928947
Lead (Pb)-Total	<0.000050		0.000050	mg/L		29-NOV-19	R4928947
Lithium (Li)-Total	<0.0010		0.0010	mg/L		29-NOV-19	R4928947
Magnesium (Mg)-Total	<0.10		0.10	mg/L		29-NOV-19	R4928947
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		29-NOV-19	R4928947
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		29-NOV-19	R4928947
Potassium (K)-Total	<0.050		0.050	mg/L		29-NOV-19	R4928947
Selenium (Se)-Total	<0.050		0.050	ug/L		29-NOV-19	R4928947
Silicon (Si)-Total	<0.10		0.10	mg/L		29-NOV-19	R4928947
Silver (Ag)-Total	<0.000010		0.000010	mg/L		29-NOV-19	R4928947
Sodium (Na)-Total	<0.050		0.050	mg/L		29-NOV-19	R4928947
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		29-NOV-19	R4928947
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		29-NOV-19	R4928947
Tin (Sn)-Total	<0.00010		0.00010	mg/L		29-NOV-19	R4928947
Titanium (Ti)-Total	<0.010		0.010	mg/L		29-NOV-19	R4928947
Uranium (U)-Total	<0.000010		0.000010	mg/L		29-NOV-19	R4928947
Vanadium (V)-Total	<0.00050		0.00050	mg/L		29-NOV-19	R4928947
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		29-NOV-19	R4928947
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.0		1.0	mg/L		27-NOV-19	R4926867
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		27-NOV-19	R4927809
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		26-NOV-19	R4922870
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		26-NOV-19	R4926915
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		26-NOV-19	R4926915
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		27-NOV-19	R4927809
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		26-NOV-19	R4926915
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		02-DEC-19	
Anion Sum	<0.10			meq/L		02-DEC-19	
Cation Sum	<0.10			meq/L		02-DEC-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		02-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		26-NOV-19	R4926915
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		26-NOV-19	R4926915
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		26-NOV-19	R4925306
<b>Oxidation redution potential by elect.</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387862-3 GH_GWB3_WG_2019-10-01_NP Sampled By: CLIENT on 25-NOV-19 @ 12:00 Matrix: WG							
<b>Oxidation redution potential by elect.</b>							
ORP	472		-1000	mV		26-NOV-19	R4927295
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		28-NOV-19	R4928098
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		26-NOV-19	R4926915
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		27-NOV-19	R4927708
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-NOV-19	R4927767
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		26-NOV-19	R4926706
<b>pH</b>							
pH	5.42		0.10	pH		27-NOV-19	R4927809

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
		This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-10

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 1 of 18

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926867</b>							
<b>WG3229600-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.5		%		85-115	27-NOV-19
<b>WG3229600-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	27-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927809</b>							
<b>WG3230595-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			103.0		%		85-115	27-NOV-19
<b>WG3230595-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	27-NOV-19
<b>WG3230595-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-3</b>	<b>DUP</b>	<b>L2387862-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	29-NOV-19
<b>WG3231587-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.5		%		80-120	29-NOV-19
<b>WG3231587-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-NOV-19
<b>WG3231587-4</b>	<b>MS</b>	<b>L2387862-2</b>						
Beryllium (Be)-Dissolved			92.3		%		70-130	29-NOV-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928947</b>							
<b>WG3231375-3</b>	<b>DUP</b>	<b>L2387862-2</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	29-NOV-19
<b>WG3231375-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.6		%		80-120	29-NOV-19
<b>WG3231375-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-NOV-19
<b>WG3231375-4</b>	<b>MS</b>	<b>L2387862-1</b>						
Beryllium (Be)-Total			95.4		%		70-130	29-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 2 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Bromide (Br)			96.0		%		85-115	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4927788							
<b>WG3230736-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.4		%		80-120	27-NOV-19
<b>WG3230736-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4927788							
<b>WG3230736-6</b>	<b>LCS</b>							
Total Organic Carbon			105.8		%		80-120	27-NOV-19
<b>WG3230736-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	27-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4927809							
<b>WG3230595-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.9		%		90-110	27-NOV-19
<b>WG3230595-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.5		%		90-110	27-NOV-19
<b>WG3230595-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Fluoride (F)			100.9		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 3 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R4926915								
WG3229650-9 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	26-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch R4927420								
WG3230563-6 LCS								
Mercury (Hg)-Dissolved								
			96.0		%		80-120	28-NOV-19
WG3230563-5 MB								
Mercury (Hg)-Dissolved								
		NP	<0.0000050		mg/L		0.000005	28-NOV-19
<b>HG-T-U-CVAF-VA</b>								
<b>Water</b>								
Batch R4928921								
WG3232023-2 LCS								
Mercury (Hg)-Total								
			96.4		%		80-120	29-NOV-19
WG3232023-1 MB								
Mercury (Hg)-Total								
			<0.00050		ug/L		0.0005	29-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch R4928726								
WG3231587-3 DUP								
L2387862-1								
Aluminum (Al)-Dissolved								
		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	29-NOV-19
Antimony (Sb)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Arsenic (As)-Dissolved								
		0.00014	0.00014		mg/L	2.3	20	29-NOV-19
Barium (Ba)-Dissolved								
		0.0733	0.0733		mg/L	0.0	20	29-NOV-19
Bismuth (Bi)-Dissolved								
		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-19
Boron (B)-Dissolved								
		0.083	0.087		mg/L	4.4	20	29-NOV-19
Cadmium (Cd)-Dissolved								
		0.0000082	0.0000111	J	mg/L	0.000002	0.00001	29-NOV-19
Calcium (Ca)-Dissolved								
		60.7	65.1		mg/L	7.0	20	29-NOV-19
Chromium (Cr)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Cobalt (Co)-Dissolved								
		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Copper (Cu)-Dissolved								
		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	29-NOV-19
Iron (Fe)-Dissolved								
		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-NOV-19
Lead (Pb)-Dissolved								
		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-19
Lithium (Li)-Dissolved								
		0.0344	0.0381		mg/L	10	20	29-NOV-19
Magnesium (Mg)-Dissolved								
		17.0	17.8		mg/L	4.6	20	29-NOV-19
Manganese (Mn)-Dissolved								
		0.00556	0.00527		mg/L	5.5	20	29-NOV-19
Molybdenum (Mo)-Dissolved								
		0.00146	0.00151		mg/L	3.3	20	29-NOV-19
Nickel (Ni)-Dissolved								
		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 4 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-3</b>	<b>DUP</b>	<b>L2387862-1</b>						
Potassium (K)-Dissolved		1.13	1.14		mg/L	0.7	20	29-NOV-19
Selenium (Se)-Dissolved		0.00246	0.00244		mg/L	0.9	20	29-NOV-19
Silicon (Si)-Dissolved		4.28	4.45		mg/L	4.0	20	29-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-NOV-19
Sodium (Na)-Dissolved		13.7	14.1		mg/L	2.8	20	29-NOV-19
Strontium (Sr)-Dissolved		0.948	0.959		mg/L	1.2	20	29-NOV-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-NOV-19
Uranium (U)-Dissolved		0.000295	0.000295		mg/L	0.3	20	29-NOV-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	29-NOV-19
Zinc (Zn)-Dissolved		0.0025	0.0025		mg/L	0.6	20	29-NOV-19
<b>WG3231587-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.7		%		80-120	29-NOV-19
Antimony (Sb)-Dissolved			91.1		%		80-120	29-NOV-19
Arsenic (As)-Dissolved			96.2		%		80-120	29-NOV-19
Barium (Ba)-Dissolved			98.9		%		80-120	29-NOV-19
Bismuth (Bi)-Dissolved			93.8		%		80-120	29-NOV-19
Boron (B)-Dissolved			100.0		%		80-120	29-NOV-19
Cadmium (Cd)-Dissolved			99.3		%		80-120	29-NOV-19
Calcium (Ca)-Dissolved			100.4		%		80-120	29-NOV-19
Chromium (Cr)-Dissolved			103.4		%		80-120	29-NOV-19
Cobalt (Co)-Dissolved			97.6		%		80-120	29-NOV-19
Copper (Cu)-Dissolved			95.0		%		80-120	29-NOV-19
Iron (Fe)-Dissolved			101.0		%		80-120	29-NOV-19
Lead (Pb)-Dissolved			98.9		%		80-120	29-NOV-19
Lithium (Li)-Dissolved			99.0		%		80-120	29-NOV-19
Magnesium (Mg)-Dissolved			97.9		%		80-120	29-NOV-19
Manganese (Mn)-Dissolved			99.5		%		80-120	29-NOV-19
Molybdenum (Mo)-Dissolved			100.5		%		80-120	29-NOV-19
Nickel (Ni)-Dissolved			96.0		%		80-120	29-NOV-19
Potassium (K)-Dissolved			99.5		%		80-120	29-NOV-19
Selenium (Se)-Dissolved			100.7		%		80-120	29-NOV-19
Silicon (Si)-Dissolved			105.6		%		60-140	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 5 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			99.9		%		80-120	29-NOV-19
Sodium (Na)-Dissolved			98.9		%		80-120	29-NOV-19
Strontium (Sr)-Dissolved			92.7		%		80-120	29-NOV-19
Thallium (Tl)-Dissolved			97.6		%		80-120	29-NOV-19
Tin (Sn)-Dissolved			99.7		%		80-120	29-NOV-19
Titanium (Ti)-Dissolved			94.3		%		80-120	29-NOV-19
Uranium (U)-Dissolved			100.4		%		80-120	29-NOV-19
Vanadium (V)-Dissolved			101.2		%		80-120	29-NOV-19
Zinc (Zn)-Dissolved			102.0		%		80-120	29-NOV-19
<b>WG3231587-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 6 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-1 MB</b>		<b>NP</b>						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
<b>WG3231587-4 MS</b>		<b>L2387862-2</b>						
Aluminum (Al)-Dissolved			96.6		%		70-130	29-NOV-19
Antimony (Sb)-Dissolved			96.6		%		70-130	29-NOV-19
Arsenic (As)-Dissolved			96.0		%		70-130	29-NOV-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Bismuth (Bi)-Dissolved			89.2		%		70-130	29-NOV-19
Boron (B)-Dissolved			97.4		%		70-130	29-NOV-19
Cadmium (Cd)-Dissolved			95.5		%		70-130	29-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Chromium (Cr)-Dissolved			94.6		%		70-130	29-NOV-19
Cobalt (Co)-Dissolved			91.4		%		70-130	29-NOV-19
Copper (Cu)-Dissolved			87.6		%		70-130	29-NOV-19
Iron (Fe)-Dissolved			88.9		%		70-130	29-NOV-19
Lead (Pb)-Dissolved			94.9		%		70-130	29-NOV-19
Lithium (Li)-Dissolved			90.2		%		70-130	29-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Manganese (Mn)-Dissolved			97.0		%		70-130	29-NOV-19
Molybdenum (Mo)-Dissolved			98.4		%		70-130	29-NOV-19
Nickel (Ni)-Dissolved			88.3		%		70-130	29-NOV-19
Potassium (K)-Dissolved			95.8		%		70-130	29-NOV-19
Selenium (Se)-Dissolved			108.3		%		70-130	29-NOV-19
Silicon (Si)-Dissolved			94.5		%		70-130	29-NOV-19
Silver (Ag)-Dissolved			97.2		%		70-130	29-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	29-NOV-19
Thallium (Tl)-Dissolved			95.3		%		70-130	29-NOV-19
Tin (Sn)-Dissolved			95.1		%		70-130	29-NOV-19
Titanium (Ti)-Dissolved			91.0		%		70-130	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 7 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-4</b>	<b>MS</b>	<b>L2387862-2</b>						
Uranium (U)-Dissolved			95.6		%		70-130	29-NOV-19
Vanadium (V)-Dissolved			95.3		%		70-130	29-NOV-19
Zinc (Zn)-Dissolved			97.5		%		70-130	29-NOV-19
<b>Batch</b>	<b>R4929893</b>							
<b>WG3232169-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.1		%		80-120	01-DEC-19
Antimony (Sb)-Dissolved			102.8		%		80-120	01-DEC-19
Arsenic (As)-Dissolved			105.1		%		80-120	01-DEC-19
Barium (Ba)-Dissolved			105.1		%		80-120	01-DEC-19
Bismuth (Bi)-Dissolved			99.6		%		80-120	01-DEC-19
Boron (B)-Dissolved			103.0		%		80-120	01-DEC-19
Cadmium (Cd)-Dissolved			105.5		%		80-120	01-DEC-19
Calcium (Ca)-Dissolved			105.8		%		80-120	01-DEC-19
Chromium (Cr)-Dissolved			102.6		%		80-120	01-DEC-19
Cobalt (Co)-Dissolved			101.1		%		80-120	01-DEC-19
Copper (Cu)-Dissolved			101.1		%		80-120	01-DEC-19
Iron (Fe)-Dissolved			99.9		%		80-120	01-DEC-19
Lead (Pb)-Dissolved			108.9		%		80-120	01-DEC-19
Lithium (Li)-Dissolved			104.9		%		80-120	01-DEC-19
Magnesium (Mg)-Dissolved			105.8		%		80-120	01-DEC-19
Manganese (Mn)-Dissolved			101.0		%		80-120	01-DEC-19
Molybdenum (Mo)-Dissolved			106.0		%		80-120	01-DEC-19
Nickel (Ni)-Dissolved			102.0		%		80-120	01-DEC-19
Potassium (K)-Dissolved			101.2		%		80-120	01-DEC-19
Selenium (Se)-Dissolved			114.1		%		80-120	01-DEC-19
Silicon (Si)-Dissolved			109.7		%		60-140	01-DEC-19
Silver (Ag)-Dissolved			107.3		%		80-120	01-DEC-19
Sodium (Na)-Dissolved			104.6		%		80-120	01-DEC-19
Strontium (Sr)-Dissolved			107.7		%		80-120	01-DEC-19
Thallium (Tl)-Dissolved			108.5		%		80-120	01-DEC-19
Tin (Sn)-Dissolved			99.7		%		80-120	01-DEC-19
Titanium (Ti)-Dissolved			97.3		%		80-120	01-DEC-19
Uranium (U)-Dissolved			110.5		%		80-120	01-DEC-19
Vanadium (V)-Dissolved			101.4		%		80-120	01-DEC-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 8 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929893</b>							
<b>WG3232169-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			107.2		%		80-120	01-DEC-19
<b>WG3232169-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 9 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928947</b>							
<b>WG3231375-3 DUP</b>		<b>L2387862-2</b>						
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Arsenic (As)-Total		0.00025	0.00022		mg/L	11	20	29-NOV-19
Barium (Ba)-Total		0.0875	0.0968		mg/L	10	20	29-NOV-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	29-NOV-19
Boron (B)-Total		0.092	0.093		mg/L	1.6	20	29-NOV-19
Cadmium (Cd)-Total		0.0000224	0.0000235		mg/L	4.8	20	29-NOV-19
Calcium (Ca)-Total		64.1	63.3		mg/L	1.2	20	29-NOV-19
Chromium (Cr)-Total		0.00061	0.00065		mg/L	7.2	20	29-NOV-19
Cobalt (Co)-Total		0.00024	0.00020		mg/L	17	20	29-NOV-19
Copper (Cu)-Total		0.00087	0.00076		mg/L	13	20	29-NOV-19
Iron (Fe)-Total		0.830	0.842		mg/L	1.5	20	29-NOV-19
Lead (Pb)-Total		0.000282	0.000261		mg/L	7.8	20	29-NOV-19
Lithium (Li)-Total		0.0366	0.0368		mg/L	0.4	20	29-NOV-19
Magnesium (Mg)-Total		20.1	19.8		mg/L	1.4	20	29-NOV-19
Manganese (Mn)-Total		0.0179	0.0174		mg/L	2.6	20	29-NOV-19
Molybdenum (Mo)-Total		0.00141	0.00141		mg/L	0.2	20	29-NOV-19
Nickel (Ni)-Total		0.00103	0.00100		mg/L	2.3	20	29-NOV-19
Potassium (K)-Total		1.29	1.28		mg/L	0.7	20	29-NOV-19
Selenium (Se)-Total		0.00229	0.00221		mg/L	3.9	20	29-NOV-19
Silicon (Si)-Total		5.09	5.03		mg/L	1.2	20	29-NOV-19
Silver (Ag)-Total		0.000010	<0.000010	RPD-NA	mg/L	N/A	20	29-NOV-19
Sodium (Na)-Total		15.4	15.2		mg/L	1.2	20	29-NOV-19
Strontium (Sr)-Total		1.05	1.04		mg/L	1.5	20	29-NOV-19
Thallium (Tl)-Total		0.000012	0.000013		mg/L	8.7	20	29-NOV-19
Tin (Sn)-Total		0.00015	<0.00010	RPD-NA	mg/L	N/A	20	29-NOV-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	29-NOV-19
Uranium (U)-Total		0.000325	0.000328		mg/L	0.9	20	29-NOV-19
Vanadium (V)-Total		0.00080	0.00086		mg/L	6.9	20	29-NOV-19
Zinc (Zn)-Total		0.0098	0.0093		mg/L	5.8	20	29-NOV-19
<b>WG3231375-2 LCS</b>								
Aluminum (Al)-Total			102.3		%		80-120	29-NOV-19
Antimony (Sb)-Total			102.1		%		80-120	29-NOV-19
Arsenic (As)-Total			100.1		%		80-120	29-NOV-19
Barium (Ba)-Total			97.8		%		80-120	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 10 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928947</b>							
<b>WG3231375-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			94.5		%		80-120	29-NOV-19
Boron (B)-Total			97.3		%		80-120	29-NOV-19
Cadmium (Cd)-Total			96.9		%		80-120	29-NOV-19
Calcium (Ca)-Total			98.4		%		80-120	29-NOV-19
Chromium (Cr)-Total			101.8		%		80-120	29-NOV-19
Cobalt (Co)-Total			98.7		%		80-120	29-NOV-19
Copper (Cu)-Total			98.5		%		80-120	29-NOV-19
Iron (Fe)-Total			101.6		%		80-120	29-NOV-19
Lead (Pb)-Total			98.4		%		80-120	29-NOV-19
Lithium (Li)-Total			97.2		%		80-120	29-NOV-19
Magnesium (Mg)-Total			100.4		%		80-120	29-NOV-19
Manganese (Mn)-Total			98.9		%		80-120	29-NOV-19
Molybdenum (Mo)-Total			97.8		%		80-120	29-NOV-19
Nickel (Ni)-Total			97.7		%		80-120	29-NOV-19
Potassium (K)-Total			102.4		%		80-120	29-NOV-19
Selenium (Se)-Total			97.3		%		80-120	29-NOV-19
Silicon (Si)-Total			104.0		%		80-120	29-NOV-19
Silver (Ag)-Total			101.9		%		80-120	29-NOV-19
Sodium (Na)-Total			102.4		%		80-120	29-NOV-19
Strontium (Sr)-Total			103.6		%		80-120	29-NOV-19
Thallium (Tl)-Total			97.6		%		80-120	29-NOV-19
Tin (Sn)-Total			99.6		%		80-120	29-NOV-19
Titanium (Ti)-Total			95.4		%		80-120	29-NOV-19
Uranium (U)-Total			101.0		%		80-120	29-NOV-19
Vanadium (V)-Total			102.9		%		80-120	29-NOV-19
Zinc (Zn)-Total			96.4		%		80-120	29-NOV-19
<b>WG3231375-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	29-NOV-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	29-NOV-19





## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 11 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928947</b>							
<b>WG3231375-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	29-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	29-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	29-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	29-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-NOV-19
<b>WG3231375-4</b>	<b>MS</b>	<b>L2387862-1</b>						
Aluminum (Al)-Total			110.3		%		70-130	29-NOV-19
Antimony (Sb)-Total			97.4		%		70-130	29-NOV-19
Arsenic (As)-Total			99.8		%		70-130	29-NOV-19
Barium (Ba)-Total			N/A	MS-B	%		-	29-NOV-19
Bismuth (Bi)-Total			92.2		%		70-130	29-NOV-19
Boron (B)-Total			98.4		%		70-130	29-NOV-19
Cadmium (Cd)-Total			96.0		%		70-130	29-NOV-19
Calcium (Ca)-Total			N/A	MS-B	%		-	29-NOV-19
Chromium (Cr)-Total			99.0		%		70-130	29-NOV-19
Cobalt (Co)-Total			93.2		%		70-130	29-NOV-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 12 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928947</b>							
<b>WG3231375-4</b>	<b>MS</b>	<b>L2387862-1</b>						
Copper (Cu)-Total			89.8		%		70-130	29-NOV-19
Iron (Fe)-Total			98.0		%		70-130	29-NOV-19
Lead (Pb)-Total			92.3		%		70-130	29-NOV-19
Lithium (Li)-Total			89.8		%		70-130	29-NOV-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	29-NOV-19
Manganese (Mn)-Total			91.9		%		70-130	29-NOV-19
Molybdenum (Mo)-Total			95.8		%		70-130	29-NOV-19
Nickel (Ni)-Total			91.2		%		70-130	29-NOV-19
Potassium (K)-Total			98.0		%		70-130	29-NOV-19
Selenium (Se)-Total			101.0		%		70-130	29-NOV-19
Silicon (Si)-Total			94.0		%		70-130	29-NOV-19
Silver (Ag)-Total			97.6		%		70-130	29-NOV-19
Sodium (Na)-Total			N/A	MS-B	%		-	29-NOV-19
Strontium (Sr)-Total			N/A	MS-B	%		-	29-NOV-19
Thallium (Tl)-Total			94.0		%		70-130	29-NOV-19
Tin (Sn)-Total			96.6		%		70-130	29-NOV-19
Titanium (Ti)-Total			98.0		%		70-130	29-NOV-19
Uranium (U)-Total			96.6		%		70-130	29-NOV-19
Vanadium (V)-Total			99.9		%		70-130	29-NOV-19
Zinc (Zn)-Total			93.2		%		70-130	29-NOV-19
<b>Batch</b>	<b>R4929893</b>							
<b>WG3232160-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			110.1		%		80-120	01-DEC-19
Antimony (Sb)-Total			111.4		%		80-120	01-DEC-19
Arsenic (As)-Total			104.2		%		80-120	01-DEC-19
Barium (Ba)-Total			110.2		%		80-120	01-DEC-19
Bismuth (Bi)-Total			107.1		%		80-120	01-DEC-19
Boron (B)-Total			106.4		%		80-120	01-DEC-19
Cadmium (Cd)-Total			103.6		%		80-120	01-DEC-19
Calcium (Ca)-Total			111.7		%		80-120	01-DEC-19
Chromium (Cr)-Total			107.6		%		80-120	01-DEC-19
Cobalt (Co)-Total			106.2		%		80-120	01-DEC-19
Copper (Cu)-Total			104.1		%		80-120	01-DEC-19
Iron (Fe)-Total			106.6		%		80-120	01-DEC-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 13 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929893</b>							
<b>WG3232160-2</b>	<b>LCS</b>							
Lead (Pb)-Total			110.5		%		80-120	01-DEC-19
Lithium (Li)-Total			107.3		%		80-120	01-DEC-19
Magnesium (Mg)-Total			106.4		%		80-120	01-DEC-19
Manganese (Mn)-Total			108.4		%		80-120	01-DEC-19
Molybdenum (Mo)-Total			113.9		%		80-120	01-DEC-19
Nickel (Ni)-Total			106.0		%		80-120	01-DEC-19
Potassium (K)-Total			104.0		%		80-120	01-DEC-19
Selenium (Se)-Total			103.7		%		80-120	01-DEC-19
Silicon (Si)-Total			114.5		%		80-120	01-DEC-19
Silver (Ag)-Total			113.6		%		80-120	01-DEC-19
Sodium (Na)-Total			111.3		%		80-120	01-DEC-19
Strontium (Sr)-Total			114.8		%		80-120	01-DEC-19
Thallium (Tl)-Total			107.0		%		80-120	01-DEC-19
Tin (Sn)-Total			105.2		%		80-120	01-DEC-19
Titanium (Ti)-Total			105.6		%		80-120	01-DEC-19
Uranium (U)-Total			114.0		%		80-120	01-DEC-19
Vanadium (V)-Total			106.4		%		80-120	01-DEC-19
Zinc (Zn)-Total			104.5		%		80-120	01-DEC-19
<b>WG3232160-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	01-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-DEC-19



## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 14 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch R4929893</b>								
<b>WG3232160-1 MB</b>								
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-DEC-19
<b>Batch R4930127</b>								
<b>WG3232160-1 MB</b>								
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-DEC-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch R4922870</b>								
<b>WG3226751-26 LCS</b>								
Ammonia as N			101.4		%		85-115	26-NOV-19
<b>WG3226751-25 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	26-NOV-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4926915</b>								
<b>WG3229650-10 LCS</b>								
Nitrite (as N)			96.2		%		90-110	26-NOV-19
<b>WG3229650-9 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4926915</b>								
<b>WG3229650-10 LCS</b>								
Nitrate (as N)			104.0		%		90-110	26-NOV-19
<b>WG3229650-9 MB</b>								





## Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 16 of 18

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4927708							
WG3229823-1	MB							
Total Dissolved Solids			<10		mg/L		10	27-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4927113							
WG3229857-10	LCS							
Total Kjeldahl Nitrogen			101.3		%		75-125	27-NOV-19
WG3229857-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4927767							
WG3229463-2	LCS							
Total Suspended Solids			97.4		%		85-115	27-NOV-19
WG3229463-1	MB							
Total Suspended Solids			<1.0		mg/L		1	27-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4926706							
WG3228854-5	LCS							
Turbidity			94.5		%		85-115	26-NOV-19
WG3228854-4	MB							
Turbidity			<0.10		NTU		0.1	26-NOV-19

# Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 17 of 18

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2387862

Report Date: 03-DEC-19

Page 18 of 18

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	25-NOV-19 14:00	26-NOV-19 16:00	0.25	26	hours	EHTR-FM
	2	25-NOV-19 12:00	26-NOV-19 16:00	0.25	28	hours	EHTR-FM
	3	25-NOV-19 12:00	26-NOV-19 16:00	0.25	28	hours	EHTR-FM
pH	1	25-NOV-19 14:00	27-NOV-19 11:00	0.25	45	hours	EHTR-FM
	2	25-NOV-19 12:00	27-NOV-19 11:00	0.25	47	hours	EHTR-FM
	3	25-NOV-19 12:00	27-NOV-19 11:00	0.25	47	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2387862 were received on 26-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

**COC ID: GHO\_QTR\_GW\_2019-10-01**

**TURNAROUND TIME:**

**RUSH:**

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job#: Greenhills Operation  
 Project Manager: Jenni Kropp  
 Email: jennifer.kropp@teck.com  
 Address: P.O. BOX 5000  
 City: Elkford Province: BC  
 Postal Code: V0B1H0 Country: Canada  
 Phone Number: 250-865-3048

Lab Name: ALS Calgary  
 Lab Contact: Lyudmyla Shvets  
 Email: Lyudmyla.Shvets@ALSGlobal.com  
 Address: 2559 29 Street NE  
 City: Calgary Province: AB  
 Postal Code: T1Y 7B5 Country: Canada  
 Phone Number: 403 407 1794

Report Format / Distribution  
 Email 1: Telgh.Stickney X X X  
 Email 2: jennifer.kropp@teck.com X X X  
 Email 3: teckcoal@equisonline.com X X X  
 Email 4: jaydon.francis@teck.com X X X  
 Email 5: Brendan.Peachey@teck.com X X X  
 Email 6: DL-Equis-GHO-Feld@teck.com X X X  
 PO number: 610013

**SAMPLE DETAILS**



L2387862-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com P	# Of Cont.
GH_MW-UTC-1B_WG_2019-10-01_NP	GH_MW-UTC-1B	WG		11/25/2019	14:00	G	7
GH_GWD3_WG_2019-10-01_NP	GH_GWD3	WG		11/25/2019		G	7
GH_GWB3_WG_2019-10-01_NP	GH_GWB3	WG		11/25/2019		G	7

**ANALYSIS REQUESTED**

Y	N	Y	N	Y	N	N
NONE	HS04	HCL	NONE	NONE	NONE	HNO3
ALS_Package-DOC	ALS_Package- TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME  
*11/26 9:00*

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X  
 Priority (2-3 business days) - 50% surcharge  
 Emergency (1 Business Day) - 100% surcharge  
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: \_\_\_\_\_ Mobile #: \_\_\_\_\_  
 Sampler's Signature: \_\_\_\_\_ Date/Time: \_\_\_\_\_

62



TECK COAL LIMITED (GREENHILLS)  
ATTN: Jennifer Kropp  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 28-NOV-19  
Report Date: 04-DEC-19 17:06 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2389191  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-10  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2389191-1 GH_GA-MW-1_WG_2019-10-01_NP							
Sampled By: CLIENT on 27-NOV-19 @ 11:10							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.87		0.50	mg/L		30-NOV-19	R4929294
Total Kjeldahl Nitrogen	0.414		0.050	mg/L		29-NOV-19	R4928780
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-DEC-19	R4934748
Total Organic Carbon	2.92		0.50	mg/L		30-NOV-19	R4929294
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-DEC-19	04-DEC-19	R4932390
Dissolved Metals Filtration Location	FIELD					03-DEC-19	R4931117
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-NOV-19	01-DEC-19	R4929433
Dissolved Mercury Filtration Location	FIELD					30-NOV-19	R4929172
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					03-DEC-19	R4931117
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-DEC-19	04-DEC-19	R4932390
Antimony (Sb)-Dissolved	0.00049		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Arsenic (As)-Dissolved	0.00056		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Barium (Ba)-Dissolved	0.0368		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Boron (B)-Dissolved	0.726		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Cadmium (Cd)-Dissolved	0.0121		0.0050	ug/L	03-DEC-19	04-DEC-19	R4932390
Calcium (Ca)-Dissolved	56.1		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Chromium (Cr)-Dissolved	0.00027		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Cobalt (Co)-Dissolved	0.40		0.10	ug/L	03-DEC-19	04-DEC-19	R4932390
Copper (Cu)-Dissolved	0.0648		0.00020	mg/L	03-DEC-19	04-DEC-19	R4932390
Iron (Fe)-Dissolved	0.073		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Lithium (Li)-Dissolved	0.175		0.0010	mg/L	03-DEC-19	04-DEC-19	R4932390
Magnesium (Mg)-Dissolved	34.1		0.10	mg/L	03-DEC-19	04-DEC-19	R4932390
Manganese (Mn)-Dissolved	0.214		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Molybdenum (Mo)-Dissolved	0.00554		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Nickel (Ni)-Dissolved	0.00307		0.00050	mg/L	03-DEC-19	04-DEC-19	R4932390
Potassium (K)-Dissolved	3.50		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Selenium (Se)-Dissolved	0.217		0.050	ug/L	03-DEC-19	04-DEC-19	R4932390
Silicon (Si)-Dissolved	4.22		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Sodium (Na)-Dissolved	171		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Strontium (Sr)-Dissolved	3.79		0.00020	mg/L	03-DEC-19	04-DEC-19	R4932390
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Uranium (U)-Dissolved	0.00145		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-DEC-19	04-DEC-19	R4932390
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	03-DEC-19	04-DEC-19	R4932390
<b>Hardness</b>							
Hardness (as CaCO3)	281		0.50	mg/L		04-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		03-DEC-19	R4932389
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0227		0.0030	mg/L		03-DEC-19	R4932389
Antimony (Sb)-Total	0.00082		0.00010	mg/L		03-DEC-19	R4932389

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2389191-1 GH_GA-MW-1_WG_2019-10-01_NP							
Sampled By: CLIENT on 27-NOV-19 @ 11:10							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00051		0.00010	mg/L		03-DEC-19	R4932389
Barium (Ba)-Total	0.0384		0.00010	mg/L		03-DEC-19	R4932389
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		03-DEC-19	R4932389
Boron (B)-Total	0.894		0.010	mg/L		03-DEC-19	R4932389
Cadmium (Cd)-Total	0.0196		0.0050	ug/L		03-DEC-19	R4932389
Calcium (Ca)-Total	63.5		0.050	mg/L		03-DEC-19	R4932389
Chromium (Cr)-Total	0.00040		0.00010	mg/L		03-DEC-19	R4932389
Cobalt (Co)-Total	0.46		0.10	ug/L		03-DEC-19	R4932389
Copper (Cu)-Total	0.139		0.00050	mg/L		03-DEC-19	R4932389
Iron (Fe)-Total	0.108		0.010	mg/L		03-DEC-19	R4932389
Lead (Pb)-Total	0.000089		0.000050	mg/L		03-DEC-19	R4932389
Lithium (Li)-Total	0.177		0.0010	mg/L		03-DEC-19	R4932389
Magnesium (Mg)-Total	32.5		0.10	mg/L		03-DEC-19	R4932389
Manganese (Mn)-Total	0.189		0.00010	mg/L		03-DEC-19	R4932389
Molybdenum (Mo)-Total	0.00595		0.000050	mg/L		03-DEC-19	R4932389
Nickel (Ni)-Total	0.00246		0.00050	mg/L		03-DEC-19	R4932389
Potassium (K)-Total	3.16		0.050	mg/L		03-DEC-19	R4932389
Selenium (Se)-Total	0.126		0.050	ug/L		03-DEC-19	R4932389
Silicon (Si)-Total	4.30		0.10	mg/L		03-DEC-19	R4932389
Silver (Ag)-Total	0.000018		0.000010	mg/L		03-DEC-19	R4932389
Sodium (Na)-Total	167		0.050	mg/L		03-DEC-19	R4932389
Strontium (Sr)-Total	4.45		0.00020	mg/L		03-DEC-19	R4932389
Thallium (Tl)-Total	0.000027		0.000010	mg/L		03-DEC-19	R4932389
Tin (Sn)-Total	<0.00010		0.00010	mg/L		03-DEC-19	R4932389
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-DEC-19	R4932389
Uranium (U)-Total	0.00153		0.000010	mg/L		03-DEC-19	R4932389
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-DEC-19	R4932389
Zinc (Zn)-Total	0.0061		0.0030	mg/L		03-DEC-19	R4932389
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12	DLM	10	mg/L		28-NOV-19	R4928357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	398		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Total (as CaCO3)	398		1.0	mg/L		28-NOV-19	R4928557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.194		0.0050	mg/L		28-NOV-19	R4928321
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		28-NOV-19	R4928441
<b>Chloride in Water by IC</b>							
Chloride (Cl)	14.1	DLHC	2.5	mg/L		28-NOV-19	R4928441
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1110		2.0	uS/cm		28-NOV-19	R4928557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.43	DLHC	0.10	mg/L		28-NOV-19	R4928441
<b>Ion Balance Calculation</b>							
Ion Balance	96.9		-100	%		04-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.6			%		04-DEC-19	
Anion Sum	13.6			meq/L		04-DEC-19	
Cation Sum	13.2			meq/L		04-DEC-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2389191-1 GH_GA-MW-1_WG_2019-10-01_NP Sampled By: CLIENT on 27-NOV-19 @ 11:10 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.479	DLHC	0.025	mg/L		28-NOV-19	R4928441
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		28-NOV-19	R4928441
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0293		0.0010	mg/L		28-NOV-19	R4928424
<b>Oxidation redution potential by elect.</b> ORP	400		-1000	mV		28-NOV-19	R4928342
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0277		0.0020	mg/L		29-NOV-19	R4928653
<b>Sulfate in Water by IC</b> Sulfate (SO4)	249	DLHC	1.5	mg/L		28-NOV-19	R4928441
<b>Total Dissolved Solids</b> Total Dissolved Solids	780	DLHC	20	mg/L		02-DEC-19	R4931109
<b>Total Suspended Solids</b> Total Suspended Solids	3.0		1.0	mg/L		02-DEC-19	R4931108
<b>Turbidity</b> Turbidity	2.39		0.10	NTU		28-NOV-19	R4928355
<b>pH</b> pH	7.69		0.10	pH		28-NOV-19	R4928557
L2389191-2 GH_GA-MW-2_WG_2019-10-01_NP Sampled By: CLIENT on 27-NOV-19 @ 12:55 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		01-DEC-19	R4929998
Total Kjeldahl Nitrogen	<0.050	TKNI	0.050	mg/L		29-NOV-19	R4928780
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		04-DEC-19	R4934748
Total Organic Carbon	0.61		0.50	mg/L		01-DEC-19	R4929998
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	03-DEC-19	04-DEC-19	R4932390
Dissolved Metals Filtration Location	FIELD					03-DEC-19	R4931117
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	30-NOV-19	01-DEC-19	R4929433
Dissolved Mercury Filtration Location	FIELD					30-NOV-19	R4929172
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					03-DEC-19	R4931117
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	03-DEC-19	04-DEC-19	R4932390
Antimony (Sb)-Dissolved	0.00190		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Arsenic (As)-Dissolved	0.00023		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Barium (Ba)-Dissolved	0.0416		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Boron (B)-Dissolved	0.022		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Cadmium (Cd)-Dissolved	0.0618		0.0050	ug/L	03-DEC-19	04-DEC-19	R4932390
Calcium (Ca)-Dissolved	160		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Cobalt (Co)-Dissolved	0.32		0.10	ug/L	03-DEC-19	04-DEC-19	R4932390
Copper (Cu)-Dissolved	0.00045		0.00020	mg/L	03-DEC-19	04-DEC-19	R4932390
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Lithium (Li)-Dissolved	0.0184		0.0010	mg/L	03-DEC-19	04-DEC-19	R4932390
Magnesium (Mg)-Dissolved	48.5		0.10	mg/L	03-DEC-19	04-DEC-19	R4932390

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2389191-2 GH_GA-MW-2_WG_2019-10-01_NP							
Sampled By: CLIENT on 27-NOV-19 @ 12:55							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.0611		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Molybdenum (Mo)-Dissolved	0.0303		0.000050	mg/L	03-DEC-19	04-DEC-19	R4932390
Nickel (Ni)-Dissolved	0.00529		0.00050	mg/L	03-DEC-19	04-DEC-19	R4932390
Potassium (K)-Dissolved	1.37		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Selenium (Se)-Dissolved	34.7	DTSE	0.050	ug/L	03-DEC-19	04-DEC-19	R4932390
Silicon (Si)-Dissolved	3.65		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Sodium (Na)-Dissolved	10.3		0.050	mg/L	03-DEC-19	04-DEC-19	R4932390
Strontium (Sr)-Dissolved	0.585		0.00020	mg/L	03-DEC-19	04-DEC-19	R4932390
Thallium (Tl)-Dissolved	0.000013		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	03-DEC-19	04-DEC-19	R4932390
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	03-DEC-19	04-DEC-19	R4932390
Uranium (U)-Dissolved	0.00721		0.000010	mg/L	03-DEC-19	04-DEC-19	R4932390
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	03-DEC-19	04-DEC-19	R4932390
Zinc (Zn)-Dissolved	0.0080		0.0010	mg/L	03-DEC-19	04-DEC-19	R4932390
<b>Hardness</b>							
Hardness (as CaCO3)	598		0.50	mg/L		04-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		03-DEC-19	R4932389
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0479		0.0030	mg/L		03-DEC-19	R4932389
Antimony (Sb)-Total	0.00208		0.00010	mg/L		03-DEC-19	R4932389
Arsenic (As)-Total	0.00028		0.00010	mg/L		03-DEC-19	R4932389
Barium (Ba)-Total	0.0442		0.00010	mg/L		03-DEC-19	R4932389
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		03-DEC-19	R4932389
Boron (B)-Total	0.022		0.010	mg/L		03-DEC-19	R4932389
Cadmium (Cd)-Total	0.0745		0.0050	ug/L		03-DEC-19	R4932389
Calcium (Ca)-Total	164		0.050	mg/L		03-DEC-19	R4932389
Chromium (Cr)-Total	0.00031		0.00010	mg/L		03-DEC-19	R4932389
Cobalt (Co)-Total	2.27		0.10	ug/L		03-DEC-19	R4932389
Copper (Cu)-Total	0.279		0.00050	mg/L		03-DEC-19	R4932389
Iron (Fe)-Total	0.132		0.010	mg/L		03-DEC-19	R4932389
Lead (Pb)-Total	0.000166		0.000050	mg/L		03-DEC-19	R4932389
Lithium (Li)-Total	0.0180		0.0010	mg/L		03-DEC-19	R4932389
Magnesium (Mg)-Total	44.9		0.10	mg/L		03-DEC-19	R4932389
Manganese (Mn)-Total	0.196		0.00010	mg/L		03-DEC-19	R4932389
Molybdenum (Mo)-Total	0.0413		0.000050	mg/L		03-DEC-19	R4932389
Nickel (Ni)-Total	0.00811		0.00050	mg/L		03-DEC-19	R4932389
Potassium (K)-Total	1.30		0.050	mg/L		03-DEC-19	R4932389
Selenium (Se)-Total	22.1		0.050	ug/L		03-DEC-19	R4932389
Silicon (Si)-Total	3.92		0.10	mg/L		03-DEC-19	R4932389
Silver (Ag)-Total	0.000025		0.000010	mg/L		03-DEC-19	R4932389
Sodium (Na)-Total	10.0		0.050	mg/L		03-DEC-19	R4932389
Strontium (Sr)-Total	0.643		0.00020	mg/L		03-DEC-19	R4932389
Thallium (Tl)-Total	0.000015		0.000010	mg/L		03-DEC-19	R4932389
Tin (Sn)-Total	0.00014		0.00010	mg/L		03-DEC-19	R4932389
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-DEC-19	R4932389
Uranium (U)-Total	0.00706		0.000010	mg/L		03-DEC-19	R4932389
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-DEC-19	R4932389
Zinc (Zn)-Total	0.0118		0.0030	mg/L		03-DEC-19	R4932389
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2389191-2 GH_GA-MW-2_WG_2019-10-01_NP							
Sampled By: CLIENT on 27-NOV-19 @ 12:55							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13	DLM	10	mg/L		28-NOV-19	R4928357
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	214		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-NOV-19	R4928557
Alkalinity, Total (as CaCO3)	214		1.0	mg/L		28-NOV-19	R4928557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		28-NOV-19	R4928321
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		28-NOV-19	R4928441
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.9	DLHC	2.5	mg/L		28-NOV-19	R4928441
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1020		2.0	uS/cm		28-NOV-19	R4928557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		28-NOV-19	R4928441
<b>Ion Balance Calculation</b>							
Ion Balance	98.9		-100	%		04-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.5			%		04-DEC-19	
Anion Sum	12.6			meq/L		04-DEC-19	
Cation Sum	12.4			meq/L		04-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	10.1	DLHC	0.025	mg/L		28-NOV-19	R4928441
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.103	DLHC	0.0050	mg/L		28-NOV-19	R4928441
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		28-NOV-19	R4928424
<b>Oxidation redution potential by elect.</b>							
ORP	378		-1000	mV		28-NOV-19	R4928342
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0073		0.0020	mg/L		29-NOV-19	R4928653
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	354	DLHC	1.5	mg/L		28-NOV-19	R4928441
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	785	DLHC	20	mg/L		02-DEC-19	R4931109
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.7		1.0	mg/L		02-DEC-19	R4931108
<b>Turbidity</b>							
Turbidity	0.65		0.10	NTU		28-NOV-19	R4928355
<b>pH</b>							
pH	7.66		0.10	pH		28-NOV-19	R4928557

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-10

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 1 of 13

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Jennifer Kropp

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4928357							
<b>WG3231035-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	28-NOV-19
<b>WG3231035-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	28-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4928557							
<b>WG3231537-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	28-NOV-19
<b>WG3231537-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	28-NOV-19
<b>WG3231537-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-NOV-19
<b>WG3231537-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932390							
<b>WG3234085-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			105.5		%		80-120	04-DEC-19
<b>WG3234085-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932389							
<b>WG3233543-27</b>	<b>DUP</b>	<b>L2389191-2</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	03-DEC-19
<b>WG3233543-26</b>	<b>LCS</b>							
Beryllium (Be)-Total			95.2		%		80-120	03-DEC-19
<b>WG3233543-25</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	03-DEC-19
<b>WG3233543-28</b>	<b>MS</b>	<b>L2389191-1</b>						
Beryllium (Be)-Total			92.0		%		70-130	03-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4928441							
<b>WG3231543-6</b>	<b>LCS</b>							
Bromide (Br)			96.2		%		85-115	28-NOV-19
<b>WG3231543-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4929294							
<b>WG3232495-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.9		%		80-120	30-NOV-19
<b>WG3232495-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
Batch	R4929998							
<b>WG3233150-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.8		%		80-120	01-DEC-19
<b>WG3233150-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-DEC-19
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4929294							
<b>WG3232495-2</b>	<b>LCS</b>							
Total Organic Carbon			92.7		%		80-120	30-NOV-19
<b>WG3232495-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-NOV-19
Batch	R4929998							
<b>WG3233150-2</b>	<b>LCS</b>							
Total Organic Carbon			100.2		%		80-120	01-DEC-19
<b>WG3233150-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	01-DEC-19
<b>CL-IC-N-CL</b>		<b>Water</b>						
Batch	R4928441							
<b>WG3231543-6</b>	<b>LCS</b>							
Chloride (Cl)			99.1		%		90-110	28-NOV-19
<b>WG3231543-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-NOV-19
<b>EC-L-PCT-CL</b>		<b>Water</b>						
Batch	R4928557							
<b>WG3231537-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.3		%		90-110	28-NOV-19
<b>WG3231537-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.8		%		90-110	28-NOV-19
<b>WG3231537-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-NOV-19
<b>WG3231537-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-NOV-19
<b>F-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Batch R4928441</b>								
<b>WG3231543-6</b>	<b>LCS</b>							
Fluoride (F)			100.3		%		90-110	28-NOV-19
<b>WG3231543-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4929433</b>								
<b>WG3232386-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.1		%		80-120	01-DEC-19
<b>WG3232386-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	01-DEC-19
<b>HG-T-U-CVAF-VA</b>								
<b>Batch R4934748</b>								
<b>WG3235329-3</b>	<b>DUP</b>	<b>L2389191-1</b>						
Mercury (Hg)-Total		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	04-DEC-19
<b>WG3235329-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.0		%		80-120	04-DEC-19
<b>WG3235329-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	04-DEC-19
<b>WG3235329-4</b>	<b>MS</b>	<b>L2389191-2</b>						
Mercury (Hg)-Total			96.0		%		70-130	04-DEC-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4932390</b>								
<b>WG3234085-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			113.6		%		80-120	04-DEC-19
Antimony (Sb)-Dissolved			99.5		%		80-120	04-DEC-19
Arsenic (As)-Dissolved			101.6		%		80-120	04-DEC-19
Barium (Ba)-Dissolved			103.9		%		80-120	04-DEC-19
Bismuth (Bi)-Dissolved			99.4		%		80-120	04-DEC-19
Boron (B)-Dissolved			105.0		%		80-120	04-DEC-19
Cadmium (Cd)-Dissolved			97.1		%		80-120	04-DEC-19
Calcium (Ca)-Dissolved			102.0		%		80-120	04-DEC-19
Chromium (Cr)-Dissolved			102.9		%		80-120	04-DEC-19
Cobalt (Co)-Dissolved			98.7		%		80-120	04-DEC-19
Copper (Cu)-Dissolved			95.1		%		80-120	04-DEC-19
Iron (Fe)-Dissolved			103.3		%		80-120	04-DEC-19
Lead (Pb)-Dissolved			97.5		%		80-120	04-DEC-19



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234085-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			102.7		%		80-120	04-DEC-19
Magnesium (Mg)-Dissolved			106.8		%		80-120	04-DEC-19
Manganese (Mn)-Dissolved			104.7		%		80-120	04-DEC-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	04-DEC-19
Nickel (Ni)-Dissolved			98.8		%		80-120	04-DEC-19
Potassium (K)-Dissolved			115.1		%		80-120	04-DEC-19
Selenium (Se)-Dissolved			101.4		%		80-120	04-DEC-19
Silicon (Si)-Dissolved			107.3		%		60-140	04-DEC-19
Silver (Ag)-Dissolved			101.6		%		80-120	04-DEC-19
Sodium (Na)-Dissolved			110.3		%		80-120	04-DEC-19
Strontium (Sr)-Dissolved			99.3		%		80-120	04-DEC-19
Thallium (Tl)-Dissolved			98.7		%		80-120	04-DEC-19
Tin (Sn)-Dissolved			101.4		%		80-120	04-DEC-19
Titanium (Ti)-Dissolved			104.4		%		80-120	04-DEC-19
Uranium (U)-Dissolved			98.6		%		80-120	04-DEC-19
Vanadium (V)-Dissolved			103.1		%		80-120	04-DEC-19
Zinc (Zn)-Dissolved			101.2		%		80-120	04-DEC-19
<b>WG3234085-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234085-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233543-27</b>	<b>DUP</b>	<b>L2389191-2</b>						
Aluminum (Al)-Total		0.0479	0.0530		mg/L	10	20	03-DEC-19
Antimony (Sb)-Total		0.00208	0.00208		mg/L	0.1	20	03-DEC-19
Arsenic (As)-Total		0.00028	0.00033		mg/L	18	20	03-DEC-19
Barium (Ba)-Total		0.0442	0.0434		mg/L	1.9	20	03-DEC-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-DEC-19
Boron (B)-Total		0.022	0.021		mg/L	5.7	20	03-DEC-19
Cadmium (Cd)-Total		0.0000745	0.0000737		mg/L	1.1	20	03-DEC-19
Calcium (Ca)-Total		164	162		mg/L	1.3	20	03-DEC-19
Chromium (Cr)-Total		0.00031	0.00037		mg/L	16	20	03-DEC-19
Cobalt (Co)-Total		0.00227	0.00223		mg/L	1.8	20	03-DEC-19
Copper (Cu)-Total		0.279	0.275		mg/L	1.6	20	03-DEC-19
Iron (Fe)-Total		0.132	0.145		mg/L	9.2	20	03-DEC-19
Lead (Pb)-Total		0.000166	0.000172		mg/L	3.2	20	03-DEC-19
Lithium (Li)-Total		0.0180	0.0180		mg/L	0.0	20	03-DEC-19
Magnesium (Mg)-Total		44.9	43.1		mg/L	4.2	20	03-DEC-19
Manganese (Mn)-Total		0.196	0.194		mg/L	1.2	20	03-DEC-19
Molybdenum (Mo)-Total		0.0413	0.0417		mg/L	1.0	20	03-DEC-19



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233543-27</b>	<b>DUP</b>	<b>L2389191-2</b>						
Nickel (Ni)-Total		0.00811	0.00802		mg/L	1.1	20	03-DEC-19
Potassium (K)-Total		1.30	1.25		mg/L	3.6	20	03-DEC-19
Selenium (Se)-Total		0.0221	0.0232		mg/L	5.1	20	03-DEC-19
Silicon (Si)-Total		3.92	3.95		mg/L	0.7	20	03-DEC-19
Silver (Ag)-Total		0.000025	0.000023		mg/L	8.1	20	03-DEC-19
Sodium (Na)-Total		10.0	10.2		mg/L	1.5	20	03-DEC-19
Strontium (Sr)-Total		0.643	0.627		mg/L	2.5	20	03-DEC-19
Thallium (Tl)-Total		0.000015	0.000014		mg/L	2.8	20	03-DEC-19
Tin (Sn)-Total		0.00014	0.00015		mg/L	7.5	20	03-DEC-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-DEC-19
Uranium (U)-Total		0.00706	0.00681		mg/L	3.6	20	03-DEC-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-DEC-19
Zinc (Zn)-Total		0.0118	0.0125		mg/L	5.2	20	03-DEC-19
<b>WG3233543-26</b>								
	<b>LCS</b>							
Aluminum (Al)-Total			103.3		%		80-120	03-DEC-19
Antimony (Sb)-Total			107.1		%		80-120	03-DEC-19
Arsenic (As)-Total			99.8		%		80-120	03-DEC-19
Barium (Ba)-Total			95.9		%		80-120	03-DEC-19
Bismuth (Bi)-Total			97.6		%		80-120	03-DEC-19
Boron (B)-Total			97.4		%		80-120	03-DEC-19
Cadmium (Cd)-Total			102.3		%		80-120	03-DEC-19
Calcium (Ca)-Total			101.9		%		80-120	03-DEC-19
Chromium (Cr)-Total			98.9		%		80-120	03-DEC-19
Cobalt (Co)-Total			101.9		%		80-120	03-DEC-19
Copper (Cu)-Total			101.5		%		80-120	03-DEC-19
Iron (Fe)-Total			99.98		%		80-120	03-DEC-19
Lead (Pb)-Total			96.9		%		80-120	03-DEC-19
Lithium (Li)-Total			96.5		%		80-120	03-DEC-19
Magnesium (Mg)-Total			96.8		%		80-120	03-DEC-19
Manganese (Mn)-Total			98.8		%		80-120	03-DEC-19
Molybdenum (Mo)-Total			100.2		%		80-120	03-DEC-19
Nickel (Ni)-Total			98.5		%		80-120	03-DEC-19
Potassium (K)-Total			101.8		%		80-120	03-DEC-19
Selenium (Se)-Total			96.2		%		80-120	03-DEC-19





## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233543-26 LCS</b>								
Silicon (Si)-Total			105.7		%		80-120	03-DEC-19
Silver (Ag)-Total			97.9		%		80-120	03-DEC-19
Sodium (Na)-Total			105.0		%		80-120	03-DEC-19
Strontium (Sr)-Total			105.3		%		80-120	03-DEC-19
Thallium (Tl)-Total			98.3		%		80-120	03-DEC-19
Tin (Sn)-Total			99.3		%		80-120	03-DEC-19
Titanium (Ti)-Total			92.2		%		80-120	03-DEC-19
Uranium (U)-Total			95.6		%		80-120	03-DEC-19
Vanadium (V)-Total			100.9		%		80-120	03-DEC-19
Zinc (Zn)-Total			99.99		%		80-120	03-DEC-19
<b>WG3233543-25 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	03-DEC-19



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233543-25 MB</b>								
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-DEC-19
<b>WG3233543-28 MS</b>		<b>L2389191-1</b>						
Aluminum (Al)-Total			100.2		%		70-130	03-DEC-19
Antimony (Sb)-Total			97.2		%		70-130	03-DEC-19
Arsenic (As)-Total			99.2		%		70-130	03-DEC-19
Barium (Ba)-Total			N/A	MS-B	%		-	03-DEC-19
Bismuth (Bi)-Total			84.0		%		70-130	03-DEC-19
Boron (B)-Total			N/A	MS-B	%		-	03-DEC-19
Cadmium (Cd)-Total			95.6		%		70-130	03-DEC-19
Calcium (Ca)-Total			N/A	MS-B	%		-	03-DEC-19
Chromium (Cr)-Total			95.3		%		70-130	03-DEC-19
Cobalt (Co)-Total			94.8		%		70-130	03-DEC-19
Copper (Cu)-Total			N/A	MS-B	%		-	03-DEC-19
Iron (Fe)-Total			94.7		%		70-130	03-DEC-19
Lead (Pb)-Total			86.3		%		70-130	03-DEC-19
Lithium (Li)-Total			N/A	MS-B	%		-	03-DEC-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	03-DEC-19
Manganese (Mn)-Total			N/A	MS-B	%		-	03-DEC-19
Molybdenum (Mo)-Total			98.4		%		70-130	03-DEC-19
Nickel (Ni)-Total			92.3		%		70-130	03-DEC-19
Potassium (K)-Total			93.4		%		70-130	03-DEC-19
Selenium (Se)-Total			99.2		%		70-130	03-DEC-19
Silicon (Si)-Total			101.6		%		70-130	03-DEC-19
Silver (Ag)-Total			94.4		%		70-130	03-DEC-19
Sodium (Na)-Total			N/A	MS-B	%		-	03-DEC-19
Strontium (Sr)-Total			N/A	MS-B	%		-	03-DEC-19
Thallium (Tl)-Total			90.0		%		70-130	03-DEC-19
Tin (Sn)-Total			98.5		%		70-130	03-DEC-19



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
Batch	R4932389							
<b>WG3233543-28 MS</b>		<b>L2389191-1</b>						
Titanium (Ti)-Total			97.5		%		70-130	03-DEC-19
Uranium (U)-Total			89.0		%		70-130	03-DEC-19
Vanadium (V)-Total			99.9		%		70-130	03-DEC-19
Zinc (Zn)-Total			92.8		%		70-130	03-DEC-19
<b>NH3-L-F-CL</b>								
Batch	R4928321							
<b>WG3230803-14 LCS</b>								
Ammonia as N			98.1		%		85-115	28-NOV-19
<b>WG3230803-13 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	28-NOV-19
<b>NO2-L-IC-N-CL</b>								
Batch	R4928441							
<b>WG3231543-6 LCS</b>								
Nitrite (as N)			99.0		%		90-110	28-NOV-19
<b>WG3231543-5 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	28-NOV-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4928441							
<b>WG3231543-6 LCS</b>								
Nitrate (as N)			103.3		%		90-110	28-NOV-19
<b>WG3231543-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	28-NOV-19
<b>ORP-CL</b>								
Batch	R4928342							
<b>WG3231164-1 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	28-NOV-19
<b>P-T-L-COL-CL</b>								
Batch	R4928653							
<b>WG3231725-2 LCS</b>								
Phosphorus (P)-Total			111.8		%		80-120	29-NOV-19
<b>WG3231725-1 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	29-NOV-19
<b>PH-CL</b>								



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4928557							
<b>WG3231537-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	28-NOV-19
<b>WG3231537-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	28-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4928424							
<b>WG3231075-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	28-NOV-19
<b>WG3231075-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	28-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4928441							
<b>WG3231543-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.0		%		90-110	28-NOV-19
<b>WG3231543-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4931109							
<b>WG3233086-2</b>	<b>LCS</b>							
Total Dissolved Solids			102.9		%		85-115	02-DEC-19
<b>WG3233086-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	02-DEC-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4928780							
<b>WG3231885-3</b>	<b>DUP</b>	<b>L2389191-2</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	29-NOV-19
<b>WG3231885-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.7		%		75-125	29-NOV-19
<b>WG3231885-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-NOV-19
<b>WG3231885-4</b>	<b>MS</b>	<b>L2389191-2</b>						
Total Kjeldahl Nitrogen			124.2		%		70-130	29-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4931108							
<b>WG3233082-2</b>	<b>LCS</b>							
Total Suspended Solids			93.2		%		85-115	02-DEC-19
<b>WG3233082-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4931108							
<b>WG3233082-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	02-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4928355							
<b>WG3231159-2 LCS</b>								
Turbidity			95.5		%		85-115	28-NOV-19
<b>WG3231159-1 MB</b>								
Turbidity			<0.10		NTU		0.1	28-NOV-19

# Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2389191

Report Date: 04-DEC-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	27-NOV-19 11:10	28-NOV-19 18:00	0.25	31	hours	EHTR-FM
	2	27-NOV-19 12:55	28-NOV-19 18:00	0.25	29	hours	EHTR-FM
pH	1	27-NOV-19 11:10	28-NOV-19 14:00	0.25	27	hours	EHTR-FM
	2	27-NOV-19 12:55	28-NOV-19 14:00	0.25	25	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2389191 were received on 28-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-10-01**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excl	PDF	EDD
Project Manager	Jenni Kropp			Lab Contact	Lyudmyla Shvets			Email 1:	X	X	X
Email	jennifer.kropp@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013		

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA
GH_GA-MW-1_WG_2019-10-01_NP	GH_GA-MW-1	WG		11/27/2019	11:10	G	7	1	1	1	1	1	1	1
GH_GA-MW-2_WG_2019-10-01_NP	GH_GA-MW-2	WG		11/27/2019	12:55	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>VK</i>	11/28 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Sampler's Signature	Mobile #	Date/Time

*40*





TECK COAL LIMITED (GREENHILLS)  
ATTN: LEIGH STICKNEY  
BOX 5000  
ELKFORD BC V0B1H0

Date Received: 10-DEC-19  
Report Date: 21-DEC-19 16:07 (MT)  
Version: FINAL

Client Phone: 250-865-3274

## Certificate of Analysis

Lab Work Order #: L2394382  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers: GHO\_QTR\_GW\_2019-1  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-1 GH_GA-MW-4_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:42							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		16-DEC-19	R4945261
Total Kjeldahl Nitrogen	0.104		0.050	mg/L		13-DEC-19	R4944775
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		16-DEC-19	R4944228
Total Organic Carbon	<0.50		0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-DEC-19	12-DEC-19	R4943051
Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-DEC-19	12-DEC-19	R4941390
Dissolved Mercury Filtration Location	FIELD					12-DEC-19	R4942320
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					18-DEC-19	R4945194
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-DEC-19	12-DEC-19	R4943051
Antimony (Sb)-Dissolved	0.00012		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Barium (Ba)-Dissolved	0.0833		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Boron (B)-Dissolved	0.013		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cadmium (Cd)-Dissolved	0.0106		0.0050	ug/L	12-DEC-19	12-DEC-19	R4943051
Calcium (Ca)-Dissolved	58.8		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Chromium (Cr)-Dissolved	0.00021		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-DEC-19	12-DEC-19	R4943051
Copper (Cu)-Dissolved	0.00339	DTC	0.00020	mg/L	18-DEC-19	18-DEC-19	R4945595
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Lead (Pb)-Dissolved	0.000110		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
Magnesium (Mg)-Dissolved	23.3		0.10	mg/L	12-DEC-19	12-DEC-19	R4943051
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Molybdenum (Mo)-Dissolved	0.00166		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Potassium (K)-Dissolved	1.11		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Selenium (Se)-Dissolved	1.85		0.050	ug/L	12-DEC-19	12-DEC-19	R4943051
Silicon (Si)-Dissolved	2.55		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Sodium (Na)-Dissolved	6.17		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Strontium (Sr)-Dissolved	0.193		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Uranium (U)-Dissolved	0.00137		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
<b>Hardness</b>							
Hardness (as CaCO3)	243		0.50	mg/L		18-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		12-DEC-19	R4942304
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
Antimony (Sb)-Total	0.00016		0.00010	mg/L		12-DEC-19	R4942304

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-1 GH_GA-MW-4_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:42							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Barium (Ba)-Total	0.0797		0.00010	mg/L		12-DEC-19	R4942304
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Boron (B)-Total	0.013		0.010	mg/L		12-DEC-19	R4942304
Cadmium (Cd)-Total	0.0095		0.0050	ug/L		12-DEC-19	R4942304
Calcium (Ca)-Total	49.6		0.050	mg/L		12-DEC-19	R4942304
Chromium (Cr)-Total	0.00018		0.00010	mg/L		12-DEC-19	R4942304
Cobalt (Co)-Total	<0.10		0.10	ug/L		12-DEC-19	R4942304
Copper (Cu)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Iron (Fe)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Lead (Pb)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Lithium (Li)-Total	0.0183		0.0010	mg/L		12-DEC-19	R4942304
Magnesium (Mg)-Total	19.8		0.10	mg/L		12-DEC-19	R4942304
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Molybdenum (Mo)-Total	0.00169		0.000050	mg/L		12-DEC-19	R4942304
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Potassium (K)-Total	1.07		0.050	mg/L		12-DEC-19	R4942304
Selenium (Se)-Total	1.68		0.050	ug/L		12-DEC-19	R4942304
Silicon (Si)-Total	2.71		0.10	mg/L		12-DEC-19	R4942304
Silver (Ag)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Sodium (Na)-Total	5.77		0.050	mg/L		12-DEC-19	R4942304
Strontium (Sr)-Total	0.171		0.00020	mg/L		12-DEC-19	R4942304
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Tin (Sn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Titanium (Ti)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Uranium (U)-Total	0.00151		0.000010	mg/L		12-DEC-19	R4942304
Vanadium (V)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.1		1.0	mg/L		11-DEC-19	R4942127
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	172		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Carbonate (as CaCO3)	12.6		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Total (as CaCO3)	185		1.0	mg/L		12-DEC-19	R4942929
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		17-DEC-19	R4945532
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		10-DEC-19	R4941622
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.52		0.50	mg/L		10-DEC-19	R4941622
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	401		2.0	uS/cm		12-DEC-19	R4942929
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.130		0.020	mg/L		10-DEC-19	R4941622
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.9			%		18-DEC-19	
Anion Sum	4.48			meq/L		18-DEC-19	
Cation Sum	5.15			meq/L		18-DEC-19	
<b>Ion Balance Calculation</b>							
Ion Balance	115		-100	%		18-DEC-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-1 GH_GA-MW-4_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 12:42 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.345		0.0050	mg/L		10-DEC-19	R4941622
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		10-DEC-19	R4941622
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0014		0.0010	mg/L		11-DEC-19	R4942271
<b>Oxidation redution potential by elect.</b> ORP	447		-1000	mV		16-DEC-19	R4944929
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		13-DEC-19	R4943276
<b>Sulfate in Water by IC</b> Sulfate (SO4)	33.0		0.30	mg/L		10-DEC-19	R4941622
<b>Total Dissolved Solids</b> Total Dissolved Solids	257	DLHC	20	mg/L		16-DEC-19	R4944736
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		16-DEC-19	R4944001
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		10-DEC-19	R4941464
<b>pH</b> pH	8.45		0.10	pH		12-DEC-19	R4942929
L2394382-2 GH_GA-MW-3_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 14:30 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	2.01		0.50	mg/L		18-DEC-19	R4945261
Total Kjeldahl Nitrogen	0.96	DLM	0.10	mg/L		13-DEC-19	R4944775
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		16-DEC-19	R4944228
Total Organic Carbon	2.28		0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-DEC-19	12-DEC-19	R4943051
Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-DEC-19	12-DEC-19	R4941390
Dissolved Mercury Filtration Location	FIELD					12-DEC-19	R4942320
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
Dissolved Metals Filtration Location	FIELD					14-DEC-19	R4943166
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-DEC-19	12-DEC-19	R4943051
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Barium (Ba)-Dissolved	0.0954		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Boron (B)-Dissolved	0.242		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	12-DEC-19	12-DEC-19	R4943051
Calcium (Ca)-Dissolved	75.3		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-DEC-19	12-DEC-19	R4943051
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Lithium (Li)-Dissolved	0.0927		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-2 GH_GA-MW-3_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 14:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Magnesium (Mg)-Dissolved	45.9		0.10	mg/L	12-DEC-19	12-DEC-19	R4943051
Manganese (Mn)-Dissolved	0.00569		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Molybdenum (Mo)-Dissolved	0.000101		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Potassium (K)-Dissolved	2.51		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Selenium (Se)-Dissolved	11.0	DTSE	0.050	ug/L	12-DEC-19	12-DEC-19	R4943051
Silicon (Si)-Dissolved	4.97		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Sodium (Na)-Dissolved	36.9		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Strontium (Sr)-Dissolved	2.24		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Uranium (U)-Dissolved	0.000273		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
<b>Hardness</b>							
Hardness (as CaCO3)	377		0.50	mg/L		13-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		12-DEC-19	R4942304
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0596		0.0030	mg/L		12-DEC-19	R4942304
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Arsenic (As)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Barium (Ba)-Total	0.0927		0.00010	mg/L		12-DEC-19	R4942304
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Boron (B)-Total	0.261		0.010	mg/L		12-DEC-19	R4942304
Cadmium (Cd)-Total	0.0577		0.0050	ug/L		12-DEC-19	R4942304
Calcium (Ca)-Total	63.2		0.050	mg/L		12-DEC-19	R4942304
Chromium (Cr)-Total	0.00070		0.00010	mg/L		12-DEC-19	R4942304
Cobalt (Co)-Total	<0.10		0.10	ug/L		12-DEC-19	R4942304
Copper (Cu)-Total	0.00407		0.00050	mg/L		12-DEC-19	R4942304
Iron (Fe)-Total	0.121		0.010	mg/L		12-DEC-19	R4942304
Lead (Pb)-Total	0.000078		0.000050	mg/L		12-DEC-19	R4942304
Lithium (Li)-Total	0.0923		0.0010	mg/L		12-DEC-19	R4942304
Magnesium (Mg)-Total	41.8		0.10	mg/L		12-DEC-19	R4942304
Manganese (Mn)-Total	0.00937		0.00010	mg/L		12-DEC-19	R4942304
Molybdenum (Mo)-Total	0.000103		0.000050	mg/L		12-DEC-19	R4942304
Nickel (Ni)-Total	0.00127		0.00050	mg/L		12-DEC-19	R4942304
Potassium (K)-Total	2.64		0.050	mg/L		12-DEC-19	R4942304
Selenium (Se)-Total	7.26		0.050	ug/L		12-DEC-19	R4942304
Silicon (Si)-Total	5.37		0.10	mg/L		12-DEC-19	R4942304
Silver (Ag)-Total	0.000020		0.000010	mg/L		12-DEC-19	R4942304
Sodium (Na)-Total	36.2		0.050	mg/L		12-DEC-19	R4942304
Strontium (Sr)-Total	1.93		0.00020	mg/L		12-DEC-19	R4942304
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Tin (Sn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Titanium (Ti)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Uranium (U)-Total	0.000206		0.000010	mg/L		12-DEC-19	R4942304
Vanadium (V)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Zinc (Zn)-Total	0.0032		0.0030	mg/L		12-DEC-19	R4942304

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-2 GH_GA-MW-3_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 14:30 Matrix: WG <b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	14.3		1.0	mg/L		11-DEC-19	R4942127
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	176		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Total (as CaCO3)	176		1.0	mg/L		12-DEC-19	R4942929
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.54	DLHC	0.25	mg/L		17-DEC-19	R4945532
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		10-DEC-19	R4941622
<b>Chloride in Water by IC</b>							
Chloride (Cl)	6.58		0.50	mg/L		10-DEC-19	R4941622
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	737		2.0	uS/cm		12-DEC-19	R4942929
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.601		0.020	mg/L		10-DEC-19	R4941622
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	10.8			%		21-DEC-19	
Anion Sum	7.44	RRV		meq/L		21-DEC-19	
Cation Sum	9.24			meq/L		21-DEC-19	
<b>Ion Balance Calculation</b>							
Ion Balance	124	RRV	-100	%		21-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.422		0.0050	mg/L		10-DEC-19	R4941622
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0228		0.0010	mg/L		10-DEC-19	R4941622
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		11-DEC-19	R4942271
<b>Oxidation redution potential by elect.</b>							
ORP	477		-1000	mV		16-DEC-19	R4944929
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0553		0.0020	mg/L		13-DEC-19	R4943276
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	177		0.30	mg/L		18-DEC-19	R4941622
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	448	DLHC	20	mg/L		16-DEC-19	R4944736
<b>Total Suspended Solids</b>							
Total Suspended Solids	17.2		1.0	mg/L		16-DEC-19	R4944001
<b>Turbidity</b>							
Turbidity	74.8		0.10	NTU		10-DEC-19	R4941464
<b>pH</b>							
pH	7.55		0.10	pH		12-DEC-19	R4942929
L2394382-3 GH_GWD2_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.83	DTC	0.50	mg/L		16-DEC-19	R4945261
Total Kjeldahl Nitrogen	0.068		0.050	mg/L		13-DEC-19	R4944775
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		16-DEC-19	R4944228
Total Organic Carbon	<0.50	DTC	0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-3 GH_GWD2_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:00							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-DEC-19	12-DEC-19	R4943051
Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-DEC-19	12-DEC-19	R4941390
Dissolved Mercury Filtration Location	FIELD					12-DEC-19	R4942320
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-DEC-19	12-DEC-19	R4943051
Antimony (Sb)-Dissolved	0.00011		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Barium (Ba)-Dissolved	0.0802		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Boron (B)-Dissolved	0.015		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cadmium (Cd)-Dissolved	0.0072		0.0050	ug/L	12-DEC-19	12-DEC-19	R4943051
Calcium (Ca)-Dissolved	56.5		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-DEC-19	12-DEC-19	R4943051
Copper (Cu)-Dissolved	0.00045		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Lithium (Li)-Dissolved	0.0172		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
Magnesium (Mg)-Dissolved	21.6		0.10	mg/L	12-DEC-19	12-DEC-19	R4943051
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Molybdenum (Mo)-Dissolved	0.00168		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Potassium (K)-Dissolved	1.04		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Selenium (Se)-Dissolved	1.86		0.050	ug/L	12-DEC-19	12-DEC-19	R4943051
Silicon (Si)-Dissolved	2.45		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Sodium (Na)-Dissolved	6.18		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Strontium (Sr)-Dissolved	0.193		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Uranium (U)-Dissolved	0.00131		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
<b>Hardness</b>							
Hardness (as CaCO3)	230		0.50	mg/L		13-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		12-DEC-19	R4942304
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
Antimony (Sb)-Total	0.00015		0.00010	mg/L		12-DEC-19	R4942304
Arsenic (As)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Barium (Ba)-Total	0.0809		0.00010	mg/L		12-DEC-19	R4942304
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Boron (B)-Total	0.015		0.010	mg/L		12-DEC-19	R4942304
Cadmium (Cd)-Total	0.0093		0.0050	ug/L		12-DEC-19	R4942304
Calcium (Ca)-Total	49.6		0.050	mg/L		12-DEC-19	R4942304
Chromium (Cr)-Total	0.00021		0.00010	mg/L		12-DEC-19	R4942304

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-3 GH_GWD2_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Total	<0.10		0.10	ug/L		12-DEC-19	R4942304
Copper (Cu)-Total	0.00073		0.00050	mg/L		12-DEC-19	R4942304
Iron (Fe)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Lead (Pb)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Lithium (Li)-Total	0.0183		0.0010	mg/L		12-DEC-19	R4942304
Magnesium (Mg)-Total	20.3		0.10	mg/L		12-DEC-19	R4942304
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Molybdenum (Mo)-Total	0.00170		0.000050	mg/L		12-DEC-19	R4942304
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Potassium (K)-Total	1.07		0.050	mg/L		12-DEC-19	R4942304
Selenium (Se)-Total	1.63		0.050	ug/L		12-DEC-19	R4942304
Silicon (Si)-Total	2.68		0.10	mg/L		12-DEC-19	R4942304
Silver (Ag)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Sodium (Na)-Total	5.85		0.050	mg/L		12-DEC-19	R4942304
Strontium (Sr)-Total	0.173		0.00020	mg/L		12-DEC-19	R4942304
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Tin (Sn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Titanium (Ti)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Uranium (U)-Total	0.00148		0.000010	mg/L		12-DEC-19	R4942304
Vanadium (V)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.3		1.0	mg/L		11-DEC-19	R4942127
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	164		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Carbonate (as CaCO3)	13.8		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Total (as CaCO3)	177		1.0	mg/L		12-DEC-19	R4942929
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		17-DEC-19	R4945532
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		10-DEC-19	R4941622
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.49		0.50	mg/L		10-DEC-19	R4941622
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	410		2.0	uS/cm		12-DEC-19	R4942929
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.177		0.020	mg/L		10-DEC-19	R4941622
<b>Ion Balance Calculation</b>							
Ion Balance	113		-100	%		13-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.0			%		13-DEC-19	
Anion Sum	4.34			meq/L		13-DEC-19	
Cation Sum	4.90			meq/L		13-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.332		0.0050	mg/L		10-DEC-19	R4941622
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		10-DEC-19	R4941622
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0026		0.0010	mg/L		11-DEC-19	R4942271
<b>Oxidation redution potential by elect.</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-3 GH_GWD2_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 12:00 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	424		-1000	mV		16-DEC-19	R4944929
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0037		0.0020	mg/L		13-DEC-19	R4943276
<b>Sulfate in Water by IC</b> Sulfate (SO4)	33.2		0.30	mg/L		10-DEC-19	R4941622
<b>Total Dissolved Solids</b> Total Dissolved Solids	263	DLHC	20	mg/L		16-DEC-19	R4944736
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		16-DEC-19	R4944001
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		10-DEC-19	R4941464
<b>pH</b> pH	8.48		0.10	pH		12-DEC-19	R4942929
L2394382-4 GH_GWB2_WG_2019-10-01_NP Sampled By: CLIENT on 09-DEC-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		16-DEC-19	R4945261
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		13-DEC-19	R4944775
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		16-DEC-19	R4944228
Total Organic Carbon	<0.50		0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	12-DEC-19	12-DEC-19	R4943051
Dissolved Metals Filtration Location	FIELD					12-DEC-19	R4942311
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4941390
Dissolved Mercury Filtration Location	FIELD					12-DEC-19	R4942320
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					14-DEC-19	R4943166
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	12-DEC-19	12-DEC-19	R4943051
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	14-DEC-19	14-DEC-19	R4943551
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Boron (B)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	12-DEC-19	12-DEC-19	R4943051
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	14-DEC-19	14-DEC-19	R4943551
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	12-DEC-19	12-DEC-19	R4943051
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	12-DEC-19	12-DEC-19	R4943051
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	12-DEC-19	12-DEC-19	R4943051
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	12-DEC-19	12-DEC-19	R4943051
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Potassium (K)-Dissolved	<0.050		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	14-DEC-19	14-DEC-19	R4943551
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-4 GH_GWB2_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	12-DEC-19	12-DEC-19	R4943051
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	14-DEC-19	14-DEC-19	R4943551
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4943051
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	12-DEC-19	12-DEC-19	R4943051
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4943051
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	12-DEC-19	12-DEC-19	R4943051
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	12-DEC-19	12-DEC-19	R4943051
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		15-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		12-DEC-19	R4942304
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Arsenic (As)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Barium (Ba)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Boron (B)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		12-DEC-19	R4942304
Calcium (Ca)-Total	<0.050		0.050	mg/L		12-DEC-19	R4942304
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Cobalt (Co)-Total	<0.10		0.10	ug/L		12-DEC-19	R4942304
Copper (Cu)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Iron (Fe)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Lead (Pb)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Lithium (Li)-Total	<0.0010		0.0010	mg/L		12-DEC-19	R4942304
Magnesium (Mg)-Total	<0.10		0.10	mg/L		12-DEC-19	R4942304
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		12-DEC-19	R4942304
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Potassium (K)-Total	<0.050		0.050	mg/L		12-DEC-19	R4942304
Selenium (Se)-Total	<0.050		0.050	ug/L		12-DEC-19	R4942304
Silicon (Si)-Total	<0.10		0.10	mg/L		12-DEC-19	R4942304
Silver (Ag)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Sodium (Na)-Total	<0.050		0.050	mg/L		12-DEC-19	R4942304
Strontium (Sr)-Total	<0.00020		0.00020	mg/L		12-DEC-19	R4942304
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Tin (Sn)-Total	<0.00010		0.00010	mg/L		12-DEC-19	R4942304
Titanium (Ti)-Total	<0.010		0.010	mg/L		12-DEC-19	R4942304
Uranium (U)-Total	<0.000010		0.000010	mg/L		12-DEC-19	R4942304
Vanadium (V)-Total	<0.00050		0.00050	mg/L		12-DEC-19	R4942304
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		12-DEC-19	R4942304
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.7		1.0	mg/L		11-DEC-19	R4942127
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<10	DLB	10	mg/L		12-DEC-19	R4942929
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-DEC-19	R4942929

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2394382-4 GH_GWB2_WG_2019-10-01_NP							
Sampled By: CLIENT on 09-DEC-19 @ 12:00							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	<10	DLB	10	mg/L		12-DEC-19	R4942929
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		17-DEC-19	R4945532
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		10-DEC-19	R4941622
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		10-DEC-19	R4941622
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		12-DEC-19	R4942929
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		10-DEC-19	R4941622
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		18-DEC-19	
Anion Sum	<0.10			meq/L		18-DEC-19	
Cation Sum	<0.10			meq/L		18-DEC-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		18-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		10-DEC-19	R4941622
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		10-DEC-19	R4941622
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0010		0.0010	mg/L		11-DEC-19	R4942271
<b>Oxidation reduction potential by elect.</b>							
ORP	447		-1000	mV		16-DEC-19	R4944929
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		13-DEC-19	R4943276
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		10-DEC-19	R4941622
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10	HTD	10	mg/L		17-DEC-19	R4945535
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		16-DEC-19	R4944001
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		10-DEC-19	R4941464
<b>pH</b>							
pH	5.55		0.10	pH		12-DEC-19	R4942929

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-1

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 1 of 15

Client: TECK COAL LIMITED (GREENHILLS)  
 BOX 5000  
 ELKFORD BC V0B1H0  
 Contact: LEIGH STICKNEY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4942127							
<b>WG3241005-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.7		%		85-115	11-DEC-19
<b>WG3241005-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	11-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4942929							
<b>WG3241975-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			104.2		%		85-115	12-DEC-19
<b>WG3241975-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.9	MB-LOR	mg/L		1	12-DEC-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4943051							
<b>WG3241394-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.9		%		80-120	12-DEC-19
<b>WG3241394-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4942304							
<b>WG3240527-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			103.0		%		80-120	12-DEC-19
<b>WG3240527-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	12-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-6</b>	<b>LCS</b>							
Bromide (Br)			105.1		%		85-115	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4945261							
<b>WG3244196-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.4		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4945261							
<b>WG3244196-2</b>	<b>LCS</b>							
Total Organic Carbon			106.0		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-6</b>	<b>LCS</b>							
Chloride (Cl)			102.7		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	10-DEC-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4942929							
<b>WG3241975-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	12-DEC-19
<b>WG3241975-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-DEC-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4941622							
<b>WG3241017-6</b>	<b>LCS</b>							
Fluoride (F)			100.7		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-DEC-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4941390							
<b>WG3241423-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			109.0		%		80-120	12-DEC-19
<b>WG3241423-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			107.0		%		80-120	12-DEC-19
<b>WG3241423-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-DEC-19
<b>WG3241423-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-DEC-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							
Batch	R4944228							
<b>WG3243734-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.2		%		80-120	16-DEC-19
<b>WG3243734-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4944228</b>							
<b>WG3243734-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	16-DEC-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4943051</b>							
<b>WG3241394-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.2		%		80-120	12-DEC-19
Antimony (Sb)-Dissolved			94.2		%		80-120	12-DEC-19
Arsenic (As)-Dissolved			99.96		%		80-120	12-DEC-19
Barium (Ba)-Dissolved			101.9		%		80-120	12-DEC-19
Bismuth (Bi)-Dissolved			112.1		%		80-120	12-DEC-19
Boron (B)-Dissolved			95.6		%		80-120	12-DEC-19
Cadmium (Cd)-Dissolved			100.7		%		80-120	12-DEC-19
Calcium (Ca)-Dissolved			102.4		%		80-120	12-DEC-19
Chromium (Cr)-Dissolved			104.6		%		80-120	12-DEC-19
Cobalt (Co)-Dissolved			101.6		%		80-120	12-DEC-19
Copper (Cu)-Dissolved			102.3		%		80-120	12-DEC-19
Iron (Fe)-Dissolved			91.7		%		80-120	12-DEC-19
Lead (Pb)-Dissolved			100.1		%		80-120	12-DEC-19
Lithium (Li)-Dissolved			97.1		%		80-120	12-DEC-19
Magnesium (Mg)-Dissolved			105.9		%		80-120	12-DEC-19
Manganese (Mn)-Dissolved			103.5		%		80-120	12-DEC-19
Molybdenum (Mo)-Dissolved			96.6		%		80-120	12-DEC-19
Nickel (Ni)-Dissolved			102.4		%		80-120	12-DEC-19
Potassium (K)-Dissolved			105.5		%		80-120	12-DEC-19
Selenium (Se)-Dissolved			103.9		%		80-120	12-DEC-19
Silicon (Si)-Dissolved			102.6		%		60-140	12-DEC-19
Silver (Ag)-Dissolved			93.5		%		80-120	12-DEC-19
Sodium (Na)-Dissolved			106.6		%		80-120	12-DEC-19
Strontium (Sr)-Dissolved			95.4		%		80-120	12-DEC-19
Thallium (Tl)-Dissolved			98.1		%		80-120	12-DEC-19
Tin (Sn)-Dissolved			96.3		%		80-120	12-DEC-19
Titanium (Ti)-Dissolved			99.95		%		80-120	12-DEC-19
Uranium (U)-Dissolved			96.4		%		80-120	12-DEC-19
Vanadium (V)-Dissolved			103.3		%		80-120	12-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943051</b>							
<b>WG3241394-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			106.0		%		80-120	12-DEC-19
<b>WG3241394-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943551</b>							
<b>WG3242490-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.7		%		80-120	14-DEC-19
Antimony (Sb)-Dissolved			98.3		%		80-120	14-DEC-19
Arsenic (As)-Dissolved			102.4		%		80-120	14-DEC-19
Barium (Ba)-Dissolved			104.8		%		80-120	14-DEC-19
Bismuth (Bi)-Dissolved			102.4		%		80-120	14-DEC-19
Boron (B)-Dissolved			98.9		%		80-120	14-DEC-19
Cadmium (Cd)-Dissolved			103.0		%		80-120	14-DEC-19
Calcium (Ca)-Dissolved			101.4		%		80-120	14-DEC-19
Chromium (Cr)-Dissolved			104.3		%		80-120	14-DEC-19
Cobalt (Co)-Dissolved			103.2		%		80-120	14-DEC-19
Copper (Cu)-Dissolved			100.7		%		80-120	14-DEC-19
Iron (Fe)-Dissolved			101.0		%		80-120	14-DEC-19
Lead (Pb)-Dissolved			101.7		%		80-120	14-DEC-19
Lithium (Li)-Dissolved			98.5		%		80-120	14-DEC-19
Magnesium (Mg)-Dissolved			101.5		%		80-120	14-DEC-19
Manganese (Mn)-Dissolved			104.1		%		80-120	14-DEC-19
Molybdenum (Mo)-Dissolved			99.3		%		80-120	14-DEC-19
Nickel (Ni)-Dissolved			103.3		%		80-120	14-DEC-19
Potassium (K)-Dissolved			102.6		%		80-120	14-DEC-19
Selenium (Se)-Dissolved			108.8		%		80-120	14-DEC-19
Silicon (Si)-Dissolved			107.6		%		60-140	14-DEC-19
Silver (Ag)-Dissolved			97.7		%		80-120	14-DEC-19
Sodium (Na)-Dissolved			104.7		%		80-120	14-DEC-19
Strontium (Sr)-Dissolved			99.7		%		80-120	14-DEC-19
Thallium (Tl)-Dissolved			101.0		%		80-120	14-DEC-19
Tin (Sn)-Dissolved			98.5		%		80-120	14-DEC-19
Titanium (Ti)-Dissolved			101.5		%		80-120	14-DEC-19
Uranium (U)-Dissolved			102.2		%		80-120	14-DEC-19
Vanadium (V)-Dissolved			103.3		%		80-120	14-DEC-19
Zinc (Zn)-Dissolved			101.7		%		80-120	14-DEC-19
<b>WG3242490-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943551</b>							
<b>WG3242490-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-DEC-19
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-3</b>	<b>DUP</b>	<b>L2394382-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-DEC-19
Antimony (Sb)-Dissolved		0.00012	0.00013		mg/L	4.1	20	18-DEC-19
Arsenic (As)-Dissolved		0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-19
Barium (Ba)-Dissolved		0.0833	0.0778		mg/L	3.2	20	18-DEC-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-3</b>	<b>DUP</b>	<b>L2394382-1</b>						
Boron (B)-Dissolved		0.013	0.014		mg/L	0.1	20	18-DEC-19
Cadmium (Cd)-Dissolved		0.0000106	0.0000089		mg/L	6.6	20	18-DEC-19
Calcium (Ca)-Dissolved		58.8	48.5		mg/L	0.1	20	18-DEC-19
Chromium (Cr)-Dissolved		0.00021	0.00019		mg/L	1.5	20	18-DEC-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-19
Copper (Cu)-Dissolved		0.00339	0.00335		mg/L	1.2	20	18-DEC-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-DEC-19
Lead (Pb)-Dissolved		0.000110	0.000105		mg/L	0.4	20	18-DEC-19
Lithium (Li)-Dissolved		0.0177	0.0183		mg/L	2.0	20	18-DEC-19
Magnesium (Mg)-Dissolved		23.3	20.0		mg/L	1.4	20	18-DEC-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-DEC-19
Molybdenum (Mo)-Dissolved		0.00166	0.00170		mg/L	1.2	20	18-DEC-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-DEC-19
Potassium (K)-Dissolved		1.11	1.03		mg/L	0.8	20	18-DEC-19
Selenium (Se)-Dissolved		0.00185	0.00182		mg/L	1.3	20	18-DEC-19
Silicon (Si)-Dissolved		2.55	2.55		mg/L	3.2	20	18-DEC-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-DEC-19
Sodium (Na)-Dissolved		6.17	5.70		mg/L	0.2	20	18-DEC-19
Strontium (Sr)-Dissolved		0.193	0.179		mg/L	2.1	20	18-DEC-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-DEC-19
Tin (Sn)-Dissolved		<0.00010	0.00010	RPD-NA	mg/L	N/A	20	18-DEC-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-DEC-19
Uranium (U)-Dissolved		0.00137	0.00151		mg/L	1.5	20	18-DEC-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-DEC-19
Zinc (Zn)-Dissolved		0.0025	0.0021		mg/L	5.3	20	18-DEC-19
<b>WG3245038-2</b>		<b>LCS</b>						
Aluminum (Al)-Dissolved			105.7		%		80-120	18-DEC-19
Antimony (Sb)-Dissolved			105.8		%		80-120	18-DEC-19
Arsenic (As)-Dissolved			112.0		%		80-120	18-DEC-19
Barium (Ba)-Dissolved			111.8		%		80-120	18-DEC-19
Bismuth (Bi)-Dissolved			106.6		%		80-120	18-DEC-19
Boron (B)-Dissolved			108.1		%		80-120	18-DEC-19
Cadmium (Cd)-Dissolved			107.8		%		80-120	18-DEC-19
Calcium (Ca)-Dissolved			109.1		%		80-120	18-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			112.1		%		80-120	18-DEC-19
Cobalt (Co)-Dissolved			109.6		%		80-120	18-DEC-19
Copper (Cu)-Dissolved			108.8		%		80-120	18-DEC-19
Iron (Fe)-Dissolved			118.7		%		80-120	18-DEC-19
Lead (Pb)-Dissolved			106.1		%		80-120	18-DEC-19
Lithium (Li)-Dissolved			108.6		%		80-120	18-DEC-19
Magnesium (Mg)-Dissolved			114.1		%		80-120	18-DEC-19
Manganese (Mn)-Dissolved			110.0		%		80-120	18-DEC-19
Molybdenum (Mo)-Dissolved			111.5		%		80-120	18-DEC-19
Nickel (Ni)-Dissolved			109.8		%		80-120	18-DEC-19
Potassium (K)-Dissolved			114.5		%		80-120	18-DEC-19
Selenium (Se)-Dissolved			110.4		%		80-120	18-DEC-19
Silicon (Si)-Dissolved			109.8		%		60-140	18-DEC-19
Silver (Ag)-Dissolved			109.9		%		80-120	18-DEC-19
Sodium (Na)-Dissolved			112.0		%		80-120	18-DEC-19
Strontium (Sr)-Dissolved			116.6		%		80-120	18-DEC-19
Thallium (Tl)-Dissolved			107.4		%		80-120	18-DEC-19
Tin (Sn)-Dissolved			106.0		%		80-120	18-DEC-19
Titanium (Ti)-Dissolved			113.6		%		80-120	18-DEC-19
Uranium (U)-Dissolved			113.6		%		80-120	18-DEC-19
Vanadium (V)-Dissolved			112.0		%		80-120	18-DEC-19
Zinc (Zn)-Dissolved			104.2		%		80-120	18-DEC-19
<b>WG3245038-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945595</b>							
<b>WG3245038-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942304</b>							
<b>WG3240527-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			104.9		%		80-120	12-DEC-19
Antimony (Sb)-Total			100.9		%		80-120	12-DEC-19
Arsenic (As)-Total			100.9		%		80-120	12-DEC-19
Barium (Ba)-Total			99.4		%		80-120	12-DEC-19
Bismuth (Bi)-Total			99.6		%		80-120	12-DEC-19
Boron (B)-Total			97.8		%		80-120	12-DEC-19
Cadmium (Cd)-Total			99.6		%		80-120	12-DEC-19
Calcium (Ca)-Total			99.8		%		80-120	12-DEC-19
Chromium (Cr)-Total			100.4		%		80-120	12-DEC-19
Cobalt (Co)-Total			99.2		%		80-120	12-DEC-19
Copper (Cu)-Total			97.2		%		80-120	12-DEC-19
Iron (Fe)-Total			100.3		%		80-120	12-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942304</b>							
<b>WG3240527-2</b>	<b>LCS</b>							
Lead (Pb)-Total			99.0		%		80-120	12-DEC-19
Lithium (Li)-Total			106.2		%		80-120	12-DEC-19
Magnesium (Mg)-Total			104.4		%		80-120	12-DEC-19
Manganese (Mn)-Total			98.7		%		80-120	12-DEC-19
Molybdenum (Mo)-Total			98.0		%		80-120	12-DEC-19
Nickel (Ni)-Total			100.6		%		80-120	12-DEC-19
Potassium (K)-Total			102.7		%		80-120	12-DEC-19
Selenium (Se)-Total			93.6		%		80-120	12-DEC-19
Silicon (Si)-Total			109.9		%		80-120	12-DEC-19
Silver (Ag)-Total			98.6		%		80-120	12-DEC-19
Sodium (Na)-Total			104.7		%		80-120	12-DEC-19
Strontium (Sr)-Total			99.0		%		80-120	12-DEC-19
Thallium (Tl)-Total			95.4		%		80-120	12-DEC-19
Tin (Sn)-Total			98.1		%		80-120	12-DEC-19
Titanium (Ti)-Total			100.8		%		80-120	12-DEC-19
Uranium (U)-Total			101.4		%		80-120	12-DEC-19
Vanadium (V)-Total			101.2		%		80-120	12-DEC-19
Zinc (Zn)-Total			103.9		%		80-120	12-DEC-19
<b>WG3240527-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	12-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	12-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	12-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	12-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	12-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	12-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	12-DEC-19





## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4942304</b>							
<b>WG3240527-1</b>	<b>MB</b>							
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	12-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	12-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	12-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	12-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	12-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	12-DEC-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4945532</b>							
<b>WG3244711-2</b>	<b>LCS</b>							
Ammonia as N			109.5		%		85-115	17-DEC-19
<b>WG3244711-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-DEC-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4941622</b>							
<b>WG3241017-6</b>	<b>LCS</b>							
Nitrite (as N)			105.2		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-DEC-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4941622</b>							
<b>WG3241017-6</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	10-DEC-19
<b>WG3241017-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-DEC-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4944929							
WG3243823-1	CRM	CL-ORP						
ORP			229		mV		210-230	16-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4943276							
WG3242072-18	LCS							
Phosphorus (P)-Total			94.1		%		80-120	13-DEC-19
WG3242072-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4942929							
WG3241975-14	LCS							
pH			7.00		pH		6.9-7.1	12-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4942271							
WG3240152-2	LCS							
Orthophosphate-Dissolved (as P)			101.6		%		80-120	11-DEC-19
WG3240152-1	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
WG3240152-14	MS	L2394382-4						
Orthophosphate-Dissolved (as P)			99.5		%		70-130	11-DEC-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4941622							
WG3241017-6	LCS							
Sulfate (SO4)			106.7		%		90-110	10-DEC-19
WG3241017-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-DEC-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4944736							
WG3243209-5	LCS							
Total Dissolved Solids			106.8		%		85-115	16-DEC-19
WG3243209-4	MB							
Total Dissolved Solids			<10		mg/L		10	16-DEC-19



## Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4945535							
<b>WG3244216-2</b>	<b>LCS</b>							
Total Dissolved Solids			103.2		%		85-115	17-DEC-19
<b>WG3244216-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-DEC-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4944775							
<b>WG3243370-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.0		%		75-125	13-DEC-19
<b>WG3243370-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.0		%		75-125	13-DEC-19
<b>WG3243370-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	13-DEC-19
<b>WG3243370-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>WG3243370-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>WG3243370-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4944001							
<b>WG3243208-4</b>	<b>LCS</b>							
Total Suspended Solids			95.9		%		85-115	16-DEC-19
<b>WG3243208-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	16-DEC-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4941464							
<b>WG3239030-14</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	10-DEC-19
<b>WG3239030-17</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	10-DEC-19
<b>WG3239030-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-DEC-19
<b>WG3239030-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-DEC-19

# Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2394382

Report Date: 21-DEC-19

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	09-DEC-19 12:42	16-DEC-19 10:00	0.25	165	hours	EHTR-FM
	2	09-DEC-19 14:30	16-DEC-19 10:00	0.25	163	hours	EHTR-FM
	3	09-DEC-19 12:00	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
	4	09-DEC-19 12:00	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
Total Dissolved Solids	4	09-DEC-19 12:00	17-DEC-19 14:30	7	8	days	EHT
pH	1	09-DEC-19 12:42	12-DEC-19 11:00	0.25	70	hours	EHTR-FM
	2	09-DEC-19 14:30	12-DEC-19 11:00	0.25	68	hours	EHTR-FM
	3	09-DEC-19 12:00	12-DEC-19 11:00	0.25	71	hours	EHTR-FM
	4	09-DEC-19 12:00	12-DEC-19 11:00	0.25	71	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2394382 were received on 10-DEC-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-12-09**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney	X	X	X
Email	Leigh.Stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:		X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	610013			

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Y	N	Y	N	Y	N	N			
 L2394382-COFC																	
GH_GA-MW-4_WG_2019-10-01_NP	GH_GA-MW-4	WG		12/9/2019	12:42	G	7	1	1	1	1	1	1	1			
GH_GA-MW-3_WG_2019-10-01_NP	GH_GA-MW-3	WG		12/9/2019	14:30	G	7	1	1	1	1	1	1	1			
GH_GWD2_WG_2019-10-01_NP	GH_GWD2	WG		12/9/2019		G	7	1	1	1	1	1	1	1			
GH_GWB2_WG_2019-10-01_NP	GH_GWB2	WG		12/9/2019		G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	12/10/2019

SERVICE REQUEST (rush - subject to availability)			
Regular (default)	X	Sampler's Name	Mobile #
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

*[Handwritten mark]*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Leigh Stickney  
P.O. BOX 5000  
ELKFORD BC V0B1H0

Date Received: 12-DEC-19  
Report Date: 20-DEC-19 17:49 (MT)  
Version: FINAL

Client Phone: 250-865-3048

## Certificate of Analysis

Lab Work Order #: L2395511  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATIONS  
C of C Numbers: GHO\_QTR\_GW\_2019-12  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2395511-1 GH_SITE-A_WG_2019-10-01_NP							
Sampled By: CLIENT on 11-DEC-19 @ 11:35							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	12.8		0.50	mg/L		19-DEC-19	R4948986
Total Kjeldahl Nitrogen	1.77		0.050	mg/L		19-DEC-19	R4945548
Mercury (Hg)-Total	0.00077		0.00050	ug/L		18-DEC-19	R4945802
Total Organic Carbon	11.6		0.50	mg/L		19-DEC-19	R4948986
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	17-DEC-19	17-DEC-19	R4945014
Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-DEC-19	18-DEC-19	R4945206
Dissolved Mercury Filtration Location	FIELD					17-DEC-19	R4944973
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
Aluminum (Al)-Dissolved	0.0070		0.0030	mg/L	17-DEC-19	17-DEC-19	R4945014
Antimony (Sb)-Dissolved	0.00111		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Arsenic (As)-Dissolved	0.00086		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Barium (Ba)-Dissolved	0.0384		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Boron (B)-Dissolved	0.025		0.020	mg/L	17-DEC-19	17-DEC-19	R4945014
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	17-DEC-19	17-DEC-19	R4945014
Calcium (Ca)-Dissolved	369		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014
Chromium (Cr)-Dissolved	0.00111		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Cobalt (Co)-Dissolved	2.39		0.20	ug/L	17-DEC-19	17-DEC-19	R4945014
Copper (Cu)-Dissolved	0.00059		0.00040	mg/L	17-DEC-19	17-DEC-19	R4945014
Iron (Fe)-Dissolved	19.9		0.020	mg/L	17-DEC-19	17-DEC-19	R4945014
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Lithium (Li)-Dissolved	0.0351		0.0020	mg/L	17-DEC-19	17-DEC-19	R4945014
Magnesium (Mg)-Dissolved	248		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014
Manganese (Mn)-Dissolved	4.23		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Molybdenum (Mo)-Dissolved	0.00146		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Nickel (Ni)-Dissolved	0.0065		0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
Potassium (K)-Dissolved	7.15		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014
Selenium (Se)-Dissolved	0.20		0.10	ug/L	17-DEC-19	17-DEC-19	R4945014
Silicon (Si)-Dissolved	5.28		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	17-DEC-19	17-DEC-19	R4945014
Sodium (Na)-Dissolved	54.9		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014
Strontium (Sr)-Dissolved	0.312		0.00040	mg/L	17-DEC-19	17-DEC-19	R4945014
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	17-DEC-19	17-DEC-19	R4945014
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Uranium (U)-Dissolved	0.00267		0.000020	mg/L	17-DEC-19	17-DEC-19	R4945014
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
Zinc (Zn)-Dissolved	0.0024		0.0020	mg/L	17-DEC-19	17-DEC-19	R4945014
<b>Hardness</b>							
Hardness (as CaCO3)	1940		0.50	mg/L		18-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.041		0.040	ug/L		17-DEC-19	R4945786
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0614		0.0060	mg/L		17-DEC-19	R4945786
Antimony (Sb)-Total	0.00190		0.00020	mg/L		17-DEC-19	R4945786

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2395511-1 GH_SITE-A_WG_2019-10-01_NP							
Sampled By: CLIENT on 11-DEC-19 @ 11:35							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00124		0.00020	mg/L		17-DEC-19	R4945786
Barium (Ba)-Total	0.0416		0.00020	mg/L		17-DEC-19	R4945786
Bismuth (Bi)-Total	<0.00010	DLA	0.00010	mg/L		17-DEC-19	R4945786
Boron (B)-Total	0.024		0.020	mg/L		17-DEC-19	R4945786
Cadmium (Cd)-Total	0.019		0.010	ug/L		17-DEC-19	R4945786
Calcium (Ca)-Total	383		0.10	mg/L		17-DEC-19	R4945786
Chromium (Cr)-Total	0.00161		0.00020	mg/L		17-DEC-19	R4945786
Cobalt (Co)-Total	2.79		0.20	ug/L		17-DEC-19	R4945786
Copper (Cu)-Total	0.0185		0.0010	mg/L		17-DEC-19	R4945786
Iron (Fe)-Total	22.8		0.020	mg/L		17-DEC-19	R4945786
Lead (Pb)-Total	0.00026		0.00010	mg/L		17-DEC-19	R4945786
Lithium (Li)-Total	0.0348		0.0020	mg/L		17-DEC-19	R4945786
Magnesium (Mg)-Total	251		0.10	mg/L		17-DEC-19	R4945786
Manganese (Mn)-Total	4.76		0.00020	mg/L		17-DEC-19	R4945786
Molybdenum (Mo)-Total	0.00254		0.00010	mg/L		17-DEC-19	R4945786
Nickel (Ni)-Total	0.0077		0.0010	mg/L		17-DEC-19	R4945786
Potassium (K)-Total	6.88		0.10	mg/L		17-DEC-19	R4945786
Selenium (Se)-Total	0.13		0.10	ug/L		17-DEC-19	R4945786
Silicon (Si)-Total	5.28		0.20	mg/L		17-DEC-19	R4945786
Silver (Ag)-Total	0.000040		0.000020	mg/L		17-DEC-19	R4945786
Sodium (Na)-Total	54.4		0.10	mg/L		17-DEC-19	R4945786
Strontium (Sr)-Total	0.323		0.00040	mg/L		17-DEC-19	R4945786
Thallium (Tl)-Total	<0.000020	DLA	0.000020	mg/L		17-DEC-19	R4945786
Tin (Sn)-Total	0.00066		0.00020	mg/L		17-DEC-19	R4945786
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-DEC-19	R4945786
Uranium (U)-Total	0.00287		0.000020	mg/L		17-DEC-19	R4945786
Vanadium (V)-Total	<0.0010	DLA	0.0010	mg/L		17-DEC-19	R4945786
Zinc (Zn)-Total	0.0164		0.0060	mg/L		17-DEC-19	R4945786
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	48.6		1.0	mg/L		12-DEC-19	R4942964
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	663		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Total (as CaCO3)	663		1.0	mg/L		13-DEC-19	R4943301
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.302		0.0050	mg/L		20-DEC-19	R4946158
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		12-DEC-19	R4943241
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		12-DEC-19	R4943241
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2900		2.0	uS/cm		13-DEC-19	R4943301
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		12-DEC-19	R4943241
<b>Ion Balance Calculation</b>							
Ion Balance	104		-100	%		18-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.8			%		18-DEC-19	
Anion Sum	41.1			meq/L		18-DEC-19	
Cation Sum	42.6			meq/L		18-DEC-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2395511-1 GH_SITE-A_WG_2019-10-01_NP Sampled By: CLIENT on 11-DEC-19 @ 11:35 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	<0.025	DLHC	0.025	mg/L		12-DEC-19	R4943241
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		12-DEC-19	R4943241
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-DEC-19	R4943502
<b>Oxidation redution potential by elect.</b> ORP	292		-1000	mV		18-DEC-19	R4945784
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.195	DLHC	0.025	mg/L		18-DEC-19	R4945457
<b>Sulfate in Water by IC</b> Sulfate (SO4)	1340	DLHC	1.5	mg/L		12-DEC-19	R4943241
<b>Total Dissolved Solids</b> Total Dissolved Solids	2770	DLHC	40	mg/L		18-DEC-19	R4946301
<b>Total Suspended Solids</b> Total Suspended Solids	75.9		1.0	mg/L		18-DEC-19	R4946254
<b>Turbidity</b> Turbidity	61.0		0.10	NTU		12-DEC-19	R4942279
<b>pH</b> pH	7.96		0.10	pH		13-DEC-19	R4943301
L2395511-2 GH_MW-ERSC-1_WG_2019-10-01_NP Sampled By: CLIENT on 11-DEC-19 @ 14:30 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.47		0.50	mg/L		19-DEC-19	R4948986
Total Kjeldahl Nitrogen	0.441		0.050	mg/L		19-DEC-19	R4945548
Mercury (Hg)-Total	<0.00050		0.00050	ug/L		18-DEC-19	R4945802
Total Organic Carbon	1.42		0.50	mg/L		19-DEC-19	R4948986
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-DEC-19	17-DEC-19	R4945014
Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-DEC-19	18-DEC-19	R4945206
Dissolved Mercury Filtration Location	FIELD					17-DEC-19	R4944973
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-DEC-19	17-DEC-19	R4945014
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Arsenic (As)-Dissolved	0.00018		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Barium (Ba)-Dissolved	0.154		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Boron (B)-Dissolved	0.015		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Cadmium (Cd)-Dissolved	0.0580		0.0050	ug/L	17-DEC-19	17-DEC-19	R4945014
Calcium (Ca)-Dissolved	123		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-DEC-19	17-DEC-19	R4945014
Copper (Cu)-Dissolved	0.00149		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Iron (Fe)-Dissolved	0.014		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Lithium (Li)-Dissolved	0.0099		0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
Magnesium (Mg)-Dissolved	33.0		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2395511-2 GH_MW-ERSC-1_WG_2019-10-01_NP							
Sampled By: CLIENT on 11-DEC-19 @ 14:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.00814		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Molybdenum (Mo)-Dissolved	0.00422		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Nickel (Ni)-Dissolved	0.00185		0.00050	mg/L	17-DEC-19	17-DEC-19	R4945014
Potassium (K)-Dissolved	0.859		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Selenium (Se)-Dissolved	23.9		0.050	ug/L	17-DEC-19	17-DEC-19	R4945014
Silicon (Si)-Dissolved	4.57		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Sodium (Na)-Dissolved	4.50		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Strontium (Sr)-Dissolved	0.334		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Thallium (Tl)-Dissolved	0.000025		0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Uranium (U)-Dissolved	0.00131		0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-DEC-19	17-DEC-19	R4945014
Zinc (Zn)-Dissolved	0.0026		0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
<b>Hardness</b>							
Hardness (as CaCO3)	444		0.50	mg/L		18-DEC-19	
<b>Total Metals in Water</b>							
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		17-DEC-19	R4945786
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0353		0.0030	mg/L		17-DEC-19	R4945786
Antimony (Sb)-Total	0.00012		0.00010	mg/L		17-DEC-19	R4945786
Arsenic (As)-Total	0.00023		0.00010	mg/L		17-DEC-19	R4945786
Barium (Ba)-Total	0.151		0.00010	mg/L		17-DEC-19	R4945786
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		17-DEC-19	R4945786
Boron (B)-Total	0.014		0.010	mg/L		17-DEC-19	R4945786
Cadmium (Cd)-Total	0.0745		0.0050	ug/L		17-DEC-19	R4945786
Calcium (Ca)-Total	127		0.050	mg/L		17-DEC-19	R4945786
Chromium (Cr)-Total	0.00026		0.00010	mg/L		17-DEC-19	R4945786
Cobalt (Co)-Total	<0.10		0.10	ug/L		17-DEC-19	R4945786
Copper (Cu)-Total	0.00371		0.00050	mg/L		17-DEC-19	R4945786
Iron (Fe)-Total	0.101		0.010	mg/L		17-DEC-19	R4945786
Lead (Pb)-Total	0.000069		0.000050	mg/L		17-DEC-19	R4945786
Lithium (Li)-Total	0.0102		0.0010	mg/L		17-DEC-19	R4945786
Magnesium (Mg)-Total	34.1		0.10	mg/L		17-DEC-19	R4945786
Manganese (Mn)-Total	0.0112		0.00010	mg/L		17-DEC-19	R4945786
Molybdenum (Mo)-Total	0.00417		0.000050	mg/L		17-DEC-19	R4945786
Nickel (Ni)-Total	0.00218		0.00050	mg/L		17-DEC-19	R4945786
Potassium (K)-Total	0.861		0.050	mg/L		17-DEC-19	R4945786
Selenium (Se)-Total	24.1		0.050	ug/L		17-DEC-19	R4945786
Silicon (Si)-Total	4.73		0.10	mg/L		17-DEC-19	R4945786
Silver (Ag)-Total	0.000035		0.000010	mg/L		17-DEC-19	R4945786
Sodium (Na)-Total	4.71		0.050	mg/L		17-DEC-19	R4945786
Strontium (Sr)-Total	0.323		0.00020	mg/L		17-DEC-19	R4945786
Thallium (Tl)-Total	0.000032		0.000010	mg/L		17-DEC-19	R4945786
Tin (Sn)-Total	<0.00010		0.00010	mg/L		17-DEC-19	R4945786
Titanium (Ti)-Total	<0.010		0.010	mg/L		17-DEC-19	R4945786
Uranium (U)-Total	0.00131		0.000010	mg/L		17-DEC-19	R4945786
Vanadium (V)-Total	<0.00050		0.00050	mg/L		17-DEC-19	R4945786
Zinc (Zn)-Total	0.0032		0.0030	mg/L		17-DEC-19	R4945786
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2395511-2 GH_MW-ERSC-1_WG_2019-10-01_NP							
Sampled By: CLIENT on 11-DEC-19 @ 14:30							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	2.1		1.0	mg/L		12-DEC-19	R4942964
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	251		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Total (as CaCO <sub>3</sub> )	251		1.0	mg/L		13-DEC-19	R4943301
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0162		0.0050	mg/L		20-DEC-19	R4946158
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		12-DEC-19	R4943241
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.97		0.50	mg/L		12-DEC-19	R4943241
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	769		2.0	uS/cm		13-DEC-19	R4943301
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.159		0.020	mg/L		12-DEC-19	R4943241
<b>Ion Balance Calculation</b>							
Ion Balance	102		-100	%		18-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.9			%		18-DEC-19	
Anion Sum	8.93			meq/L		18-DEC-19	
Cation Sum	9.09			meq/L		18-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	4.03		0.0050	mg/L		12-DEC-19	R4943241
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0036		0.0010	mg/L		12-DEC-19	R4943241
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0037		0.0010	mg/L		14-DEC-19	R4943502
<b>Oxidation redution potential by elect.</b>							
ORP	323		-1000	mV		18-DEC-19	R4945784
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0230		0.0020	mg/L		18-DEC-19	R4945457
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	170		0.30	mg/L		12-DEC-19	R4943241
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	550	DLHC	20	mg/L		18-DEC-19	R4946301
<b>Total Suspended Solids</b>							
Total Suspended Solids	15.7		1.0	mg/L		18-DEC-19	R4946254
<b>Turbidity</b>							
Turbidity	2.35		0.10	NTU		12-DEC-19	R4942279
<b>pH</b>							
pH	7.93		0.10	pH		13-DEC-19	R4943301

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-12

## GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 1 of 11

Client: TECK COAL LIMITED (GREENHILLS)  
 P.O. BOX 5000  
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942964</b>							
<b>WG3242015-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.0		%		85-115	12-DEC-19
<b>WG3242015-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	12-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.9		%		85-115	13-DEC-19
<b>WG3242622-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.3	MB-LOR	mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.1		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243944-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	17-DEC-19
<b>Batch</b>	<b>R4945786</b>							
<b>WG3243944-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.4		%		80-120	17-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943241</b>							
<b>WG3242561-6</b>	<b>LCS</b>							
Bromide (Br)			110.4		%		85-115	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4948986</b>							
<b>WG3247215-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.0		%		80-120	19-DEC-19
<b>WG3247215-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-DEC-19





## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4948986							
<b>WG3247215-2</b>	<b>LCS</b>							
Total Organic Carbon			102.3		%		80-120	19-DEC-19
<b>WG3247215-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	19-DEC-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Chloride (Cl)			103.5		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-DEC-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.8		%		90-110	13-DEC-19
<b>WG3242622-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-DEC-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4945206							
<b>WG3244753-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.8		%		80-120	18-DEC-19
<b>WG3244753-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-DEC-19
<b>HG-T-U-CVAF-VA</b>	<b>Water</b>							
Batch	R4945802							
<b>WG3245708-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.8		%		80-120	18-DEC-19
<b>WG3245708-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	18-DEC-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	17-DEC-19
Antimony (Sb)-Dissolved			103.9		%		80-120	17-DEC-19
Arsenic (As)-Dissolved			98.5		%		80-120	17-DEC-19
Barium (Ba)-Dissolved			102.2		%		80-120	17-DEC-19
Bismuth (Bi)-Dissolved			104.9		%		80-120	17-DEC-19
Boron (B)-Dissolved			105.8		%		80-120	17-DEC-19
Cadmium (Cd)-Dissolved			96.8		%		80-120	17-DEC-19
Calcium (Ca)-Dissolved			107.2		%		80-120	17-DEC-19
Chromium (Cr)-Dissolved			100.8		%		80-120	17-DEC-19
Cobalt (Co)-Dissolved			98.4		%		80-120	17-DEC-19
Copper (Cu)-Dissolved			95.1		%		80-120	17-DEC-19
Iron (Fe)-Dissolved			97.5		%		80-120	17-DEC-19
Lead (Pb)-Dissolved			99.9		%		80-120	17-DEC-19
Lithium (Li)-Dissolved			105.8		%		80-120	17-DEC-19
Magnesium (Mg)-Dissolved			96.3		%		80-120	17-DEC-19
Manganese (Mn)-Dissolved			96.4		%		80-120	17-DEC-19
Molybdenum (Mo)-Dissolved			103.6		%		80-120	17-DEC-19
Nickel (Ni)-Dissolved			96.6		%		80-120	17-DEC-19
Potassium (K)-Dissolved			102.7		%		80-120	17-DEC-19
Selenium (Se)-Dissolved			98.8		%		80-120	17-DEC-19
Silicon (Si)-Dissolved			114.0		%		60-140	17-DEC-19
Silver (Ag)-Dissolved			103.3		%		80-120	17-DEC-19
Sodium (Na)-Dissolved			98.6		%		80-120	17-DEC-19
Strontium (Sr)-Dissolved			105.3		%		80-120	17-DEC-19
Thallium (Tl)-Dissolved			103.1		%		80-120	17-DEC-19
Tin (Sn)-Dissolved			93.6		%		80-120	17-DEC-19
Titanium (Ti)-Dissolved			95.5		%		80-120	17-DEC-19
Uranium (U)-Dissolved			101.1		%		80-120	17-DEC-19
Vanadium (V)-Dissolved			101.8		%		80-120	17-DEC-19
Zinc (Zn)-Dissolved			90.0		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243944-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	17-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-DEC-19



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243944-1</b>	<b>MB</b>							
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	17-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-DEC-19
Iron (Fe)-Total			0.012	B	mg/L		0.01	17-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	17-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	17-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	17-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	17-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	17-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	17-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	17-DEC-19
<b>Batch</b>	<b>R4945090</b>							
<b>WG3243944-1</b>	<b>MB</b>							
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-DEC-19
<b>Batch</b>	<b>R4945786</b>							
<b>WG3243944-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.2		%		80-120	17-DEC-19
Antimony (Sb)-Total			97.8		%		80-120	17-DEC-19
Arsenic (As)-Total			97.9		%		80-120	17-DEC-19
Barium (Ba)-Total			99.0		%		80-120	17-DEC-19



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4945786</b>							
<b>WG3243944-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			102.0		%		80-120	17-DEC-19
Boron (B)-Total			94.2		%		80-120	17-DEC-19
Cadmium (Cd)-Total			95.3		%		80-120	17-DEC-19
Calcium (Ca)-Total			97.7		%		80-120	17-DEC-19
Chromium (Cr)-Total			98.0		%		80-120	17-DEC-19
Cobalt (Co)-Total			98.5		%		80-120	17-DEC-19
Copper (Cu)-Total			94.0		%		80-120	17-DEC-19
Iron (Fe)-Total			94.9		%		80-120	17-DEC-19
Lead (Pb)-Total			96.9		%		80-120	17-DEC-19
Lithium (Li)-Total			98.1		%		80-120	17-DEC-19
Magnesium (Mg)-Total			90.3		%		80-120	17-DEC-19
Manganese (Mn)-Total			93.0		%		80-120	17-DEC-19
Molybdenum (Mo)-Total			95.4		%		80-120	17-DEC-19
Nickel (Ni)-Total			97.0		%		80-120	17-DEC-19
Potassium (K)-Total			97.9		%		80-120	17-DEC-19
Selenium (Se)-Total			100.6		%		80-120	17-DEC-19
Silicon (Si)-Total			106.2		%		80-120	17-DEC-19
Silver (Ag)-Total			94.0		%		80-120	17-DEC-19
Sodium (Na)-Total			97.4		%		80-120	17-DEC-19
Strontium (Sr)-Total			89.1		%		80-120	17-DEC-19
Thallium (Tl)-Total			101.3		%		80-120	17-DEC-19
Tin (Sn)-Total			95.0		%		80-120	17-DEC-19
Titanium (Ti)-Total			95.8		%		80-120	17-DEC-19
Uranium (U)-Total			96.2		%		80-120	17-DEC-19
Vanadium (V)-Total			99.8		%		80-120	17-DEC-19
Zinc (Zn)-Total			98.4		%		80-120	17-DEC-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4946158</b>							
<b>WG3245714-6</b>	<b>LCS</b>							
Ammonia as N			94.5		%		85-115	18-DEC-19
<b>WG3245714-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-DEC-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Nitrite (as N)			105.0		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-DEC-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-DEC-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4945784							
<b>WG3245474-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	18-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4945457							
<b>WG3245389-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.1		%		80-120	18-DEC-19
<b>WG3245389-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	18-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4943502							
<b>WG3242568-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.5		%		80-120	14-DEC-19
<b>WG3242568-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-DEC-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.4		%		90-110	12-DEC-19
<b>WG3242561-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4943241							
<b>WG3242561-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-DEC-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4946301							
<b>WG3245184-2 LCS</b>								
Total Dissolved Solids			96.9		%		85-115	18-DEC-19
<b>WG3245184-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	18-DEC-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4945548							
<b>WG3245455-10 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	19-DEC-19
<b>WG3245455-14 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	19-DEC-19
<b>WG3245455-18 LCS</b>								
Total Kjeldahl Nitrogen			88.4		%		75-125	19-DEC-19
<b>WG3245455-2 LCS</b>								
Total Kjeldahl Nitrogen			92.6		%		75-125	18-DEC-19
<b>WG3245455-6 LCS</b>								
Total Kjeldahl Nitrogen			90.7		%		75-125	19-DEC-19
<b>WG3245455-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-DEC-19
<b>WG3245455-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>WG3245455-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-DEC-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4946254							
<b>WG3245182-2 LCS</b>								
Total Suspended Solids			101.9		%		85-115	18-DEC-19
<b>WG3245182-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	18-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4942279							
<b>WG3241383-11 LCS</b>								
Turbidity			97.0		%		85-115	12-DEC-19
<b>WG3241383-10 MB</b>								
Turbidity			<0.10		NTU		0.1	12-DEC-19



# Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

---

# Quality Control Report

Workorder: L2395511

Report Date: 20-DEC-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	11-DEC-19 11:35	18-DEC-19 12:00	0.25	168	hours	EHTR-FM
	2	11-DEC-19 14:30	18-DEC-19 12:00	0.25	166	hours	EHTR-FM
pH	1	11-DEC-19 11:35	13-DEC-19 11:30	0.25	48	hours	EHTR-FM
	2	11-DEC-19 14:30	13-DEC-19 11:30	0.25	45	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2395511 were received on 12-DEC-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

**COC ID:** GHO\_QTR\_GW\_2019-12-11

**TURNAROUND TIME:**

**RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	Leigh.Stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	V0B1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			Email 6:	DL-EQUIS-GHO-Field@teck.com	X	X	X
								PO number	610013			

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered J F Field L Lab P2 Field & Lab N Non						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA							
GH_SITE-A_WG_2019-10-01_NP	GH_SITE-A	WG		12/11/2019	11:35	G	7	1	1	1	1	1	1	1							
GH_MW-ERSC-1_WG_2019-10-01_NP	GH_MW-ERSC-1	WG		12/11/2019	14:30	G	7	1	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	<i>12/12 0850</i>

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>		
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

*4<sup>01</sup>*



TECK COAL LIMITED (GREENHILLS)  
ATTN: Leigh Stickney  
BOX 5000  
ELKFORD BC V0B1H0

Date Received: 13-DEC-19  
Report Date: 20-DEC-19 13:59 (MT)  
Version: FINAL

Client Phone: 250-865-3274

## Certificate of Analysis

**Lab Work Order #:** L2396081  
Project P.O. #: VPO00610013  
Job Reference: GREENHILLS OPERATION  
C of C Numbers: GHO\_QTR\_GW\_2019-12  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-1 GH_MW-PC_WG_2019-10-01_NP							
Sampled By: CLIENT on 12-DEC-19 @ 11:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.09		0.50	mg/L		16-DEC-19	R4945261
Total Kjeldahl Nitrogen	0.372		0.050	mg/L		17-DEC-19	R4944841
Mercury (Hg)-Total	0.00583		0.00050	ug/L		17-DEC-19	R4945046
Total Organic Carbon	1.45		0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-19	15-DEC-19	R4944244
Dissolved Metals Filtration Location	FIELD					15-DEC-19	R4943534
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-DEC-19	17-DEC-19	R4944446
Dissolved Mercury Filtration Location	FIELD					17-DEC-19	R4944998
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					15-DEC-19	R4943534
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-19	15-DEC-19	R4944244
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Barium (Ba)-Dissolved	0.0978		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Boron (B)-Dissolved	<0.010		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Cadmium (Cd)-Dissolved	0.0372		0.0050	ug/L	15-DEC-19	15-DEC-19	R4944244
Calcium (Ca)-Dissolved	123		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Chromium (Cr)-Dissolved	0.00025		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	15-DEC-19	15-DEC-19	R4944244
Copper (Cu)-Dissolved	0.00531		0.00020	mg/L	15-DEC-19	15-DEC-19	R4944244
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Lithium (Li)-Dissolved	0.0080		0.0010	mg/L	15-DEC-19	15-DEC-19	R4944244
Magnesium (Mg)-Dissolved	91.9		0.10	mg/L	15-DEC-19	15-DEC-19	R4944244
Manganese (Mn)-Dissolved	0.00039		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Molybdenum (Mo)-Dissolved	0.00243		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Nickel (Ni)-Dissolved	0.00050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Potassium (K)-Dissolved	0.975		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Selenium (Se)-Dissolved	80.5		0.050	ug/L	15-DEC-19	15-DEC-19	R4944244
Silicon (Si)-Dissolved	2.66		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Sodium (Na)-Dissolved	1.16		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Strontium (Sr)-Dissolved	0.141		0.00020	mg/L	15-DEC-19	15-DEC-19	R4944244
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Uranium (U)-Dissolved	0.00500		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Vanadium (V)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Zinc (Zn)-Dissolved	0.0039		0.0010	mg/L	15-DEC-19	15-DEC-19	R4944244
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	686		0.50	mg/L		16-DEC-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	0.193		0.020	ug/L		16-DEC-19	R4944186
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	1.82		0.0030	mg/L		16-DEC-19	R4944186
Antimony (Sb)-Total	0.00014		0.00010	mg/L		16-DEC-19	R4944186

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-1 GH_MW-PC_WG_2019-10-01_NP							
Sampled By: CLIENT on 12-DEC-19 @ 11:00							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Arsenic (As)-Total	0.00103		0.00010	mg/L		16-DEC-19	R4944186
Barium (Ba)-Total	0.256		0.00010	mg/L		16-DEC-19	R4944186
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-19	R4944186
Boron (B)-Total	<0.010		0.010	mg/L		16-DEC-19	R4944186
Cadmium (Cd)-Total	0.115		0.0050	ug/L		16-DEC-19	R4944186
Calcium (Ca)-Total	137		0.050	mg/L		16-DEC-19	R4944186
Chromium (Cr)-Total	0.00235		0.00010	mg/L		16-DEC-19	R4944186
Cobalt (Co)-Total	1.48		0.10	ug/L		16-DEC-19	R4944186
Copper (Cu)-Total	0.0297		0.00050	mg/L		16-DEC-19	R4944186
Iron (Fe)-Total	1.86		0.010	mg/L		16-DEC-19	R4944186
Lead (Pb)-Total	0.00185		0.000050	mg/L		16-DEC-19	R4944186
Lithium (Li)-Total	0.0093		0.0010	mg/L		16-DEC-19	R4944186
Magnesium (Mg)-Total	93.8		0.10	mg/L		16-DEC-19	R4944186
Manganese (Mn)-Total	0.0739		0.00010	mg/L		16-DEC-19	R4944186
Molybdenum (Mo)-Total	0.00259		0.000050	mg/L		16-DEC-19	R4944186
Nickel (Ni)-Total	0.00225		0.00050	mg/L		16-DEC-19	R4944186
Potassium (K)-Total	1.33		0.050	mg/L		16-DEC-19	R4944186
Selenium (Se)-Total	71.3		0.050	ug/L		16-DEC-19	R4944186
Silicon (Si)-Total	6.09		0.10	mg/L		16-DEC-19	R4944186
Silver (Ag)-Total	0.000034		0.000010	mg/L		16-DEC-19	R4944186
Sodium (Na)-Total	1.18		0.050	mg/L		16-DEC-19	R4944186
Strontium (Sr)-Total	0.177		0.00020	mg/L		16-DEC-19	R4944186
Thallium (Tl)-Total	0.000035		0.000010	mg/L		16-DEC-19	R4944186
Tin (Sn)-Total	0.00020		0.00010	mg/L		16-DEC-19	R4944186
Titanium (Ti)-Total	0.027		0.010	mg/L		16-DEC-19	R4944186
Uranium (U)-Total	0.00551		0.000010	mg/L		16-DEC-19	R4944186
Vanadium (V)-Total	0.00302		0.00050	mg/L		16-DEC-19	R4944186
Zinc (Zn)-Total	0.0116		0.0030	mg/L		16-DEC-19	R4944186
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.5		1.0	mg/L		14-DEC-19	R4944069
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	208		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Total (as CaCO3)	208		1.0	mg/L		13-DEC-19	R4943301
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0065		0.0050	mg/L		13-DEC-19	R4943991
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		13-DEC-19	R4945458
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.96		0.50	mg/L		13-DEC-19	R4945458
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1110		2.0	uS/cm		13-DEC-19	R4943301
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.222		0.020	mg/L		13-DEC-19	R4945458
<b>Ion Balance Calculation</b>							
Ion Balance	108		-100	%		18-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	3.7			%		18-DEC-19	
Anion Sum	12.8			meq/L		18-DEC-19	
Cation Sum	13.8			meq/L		18-DEC-19	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-1 GH_MW-PC_WG_2019-10-01_NP Sampled By: CLIENT on 12-DEC-19 @ 11:00 Matrix: WG							
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	1.99		0.0050	mg/L		13-DEC-19	R4945458
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		13-DEC-19	R4945458
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0073		0.0010	mg/L		14-DEC-19	R4943502
<b>Oxidation redution potential by elect.</b> ORP	397		-1000	mV		13-DEC-19	R4943038
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0867		0.0020	mg/L		16-DEC-19	R4943949
<b>Sulfate in Water by IC</b> Sulfate (SO4)	407		0.30	mg/L		13-DEC-19	R4945458
<b>Total Dissolved Solids</b> Total Dissolved Solids	895	DLHC	20	mg/L		13-DEC-19	R4943921
<b>Total Suspended Solids</b> Total Suspended Solids	85.2		1.0	mg/L		13-DEC-19	R4943988
<b>Turbidity</b> Turbidity	41.3		0.10	NTU		13-DEC-19	R4943687
<b>pH</b> pH	8.29		0.10	pH		13-DEC-19	R4943301
L2396081-2 GH_MW-RLP-1D_WG_2019-10-01_NP Sampled By: CLIENT on 12-DEC-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	12.0		0.50	mg/L		18-DEC-19	R4945261
Total Kjeldahl Nitrogen	<0.50	DLM	0.50	mg/L		17-DEC-19	R4944841
Mercury (Hg)-Total	<0.0020		0.0020	ug/L		17-DEC-19	R4945046
Total Organic Carbon	17.7		0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-DEC-19	17-DEC-19	R4945014
Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-DEC-19	17-DEC-19	R4944446
Dissolved Mercury Filtration Location	FIELD					17-DEC-19	R4944998
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					17-DEC-19	R4944380
Aluminum (Al)-Dissolved	0.0038		0.0030	mg/L	17-DEC-19	17-DEC-19	R4945014
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Barium (Ba)-Dissolved	0.0437		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Boron (B)-Dissolved	0.017		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-DEC-19	17-DEC-19	R4945014
Calcium (Ca)-Dissolved	43.3		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-DEC-19	17-DEC-19	R4945014
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Iron (Fe)-Dissolved	0.045		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Lithium (Li)-Dissolved	0.0071		0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
Magnesium (Mg)-Dissolved	27.6		0.10	mg/L	17-DEC-19	17-DEC-19	R4945014

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-2 GH_MW-RLP-1D_WG_2019-10-01_NP							
Sampled By: CLIENT on 12-DEC-19 @ 12:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Manganese (Mn)-Dissolved	0.0170	DTC	0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Molybdenum (Mo)-Dissolved	0.000053		0.000050	mg/L	17-DEC-19	17-DEC-19	R4945014
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	17-DEC-19	17-DEC-19	R4945014
Potassium (K)-Dissolved	1.17		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Selenium (Se)-Dissolved	1.68	DTSE	0.050	ug/L	17-DEC-19	17-DEC-19	R4945014
Silicon (Si)-Dissolved	5.12		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Sodium (Na)-Dissolved	3.23		0.050	mg/L	17-DEC-19	17-DEC-19	R4945014
Strontium (Sr)-Dissolved	0.192		0.00020	mg/L	17-DEC-19	17-DEC-19	R4945014
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	17-DEC-19	17-DEC-19	R4945014
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-DEC-19	17-DEC-19	R4945014
Uranium (U)-Dissolved	0.000195	DTC	0.000010	mg/L	17-DEC-19	17-DEC-19	R4945014
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-DEC-19	17-DEC-19	R4945014
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	17-DEC-19	17-DEC-19	R4945014
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	222		0.50	mg/L		17-DEC-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-19	R4944186
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0244		0.0030	mg/L		16-DEC-19	R4944186
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-DEC-19	R4944186
Arsenic (As)-Total	0.00026		0.00010	mg/L		16-DEC-19	R4944186
Barium (Ba)-Total	0.0386		0.00010	mg/L		16-DEC-19	R4944186
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-19	R4944186
Boron (B)-Total	0.018		0.010	mg/L		16-DEC-19	R4944186
Cadmium (Cd)-Total	<0.0050		0.0050	ug/L		16-DEC-19	R4944186
Calcium (Ca)-Total	42.1		0.050	mg/L		16-DEC-19	R4944186
Chromium (Cr)-Total	0.00012		0.00010	mg/L		16-DEC-19	R4944186
Cobalt (Co)-Total	<0.10		0.10	ug/L		16-DEC-19	R4944186
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-DEC-19	R4944186
Iron (Fe)-Total	0.093		0.010	mg/L		16-DEC-19	R4944186
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-DEC-19	R4944186
Lithium (Li)-Total	0.0073		0.0010	mg/L		16-DEC-19	R4944186
Magnesium (Mg)-Total	30.7		0.10	mg/L		16-DEC-19	R4944186
Manganese (Mn)-Total	0.00284		0.00010	mg/L		16-DEC-19	R4944186
Molybdenum (Mo)-Total	0.000131		0.000050	mg/L		17-DEC-19	R4945042
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		16-DEC-19	R4944186
Potassium (K)-Total	1.19		0.050	mg/L		16-DEC-19	R4944186
Selenium (Se)-Total	<0.050		0.050	ug/L		16-DEC-19	R4944186
Silicon (Si)-Total	5.32		0.10	mg/L		16-DEC-19	R4944186
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-19	R4944186
Sodium (Na)-Total	3.51		0.050	mg/L		16-DEC-19	R4944186
Strontium (Sr)-Total	0.193		0.00020	mg/L		16-DEC-19	R4944186
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		16-DEC-19	R4944186
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-19	R4944186
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-19	R4944186
Uranium (U)-Total	0.000027		0.000010	mg/L		16-DEC-19	R4944186
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-DEC-19	R4944186
Zinc (Zn)-Total	0.0124		0.0030	mg/L		16-DEC-19	R4944186
<b>Routine for Teck Coal</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-2 GH_MW-RLP-1D_WG_2019-10-01_NP Sampled By: CLIENT on 12-DEC-19 @ 12:50 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		14-DEC-19	R4944069
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	163		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	7.4		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Total (as CaCO <sub>3</sub> )	171		1.0	mg/L		13-DEC-19	R4943301
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.55	DLHC	0.25	mg/L		13-DEC-19	R4943991
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		13-DEC-19	R4945458
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.48		0.50	mg/L		13-DEC-19	R4945458
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	396		2.0	uS/cm		13-DEC-19	R4943301
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.40		0.020	mg/L		13-DEC-19	R4945458
<b>Ion Balance Calculation</b>							
Ion Balance	129	RRV	-100	%		20-DEC-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	12.7			%		18-DEC-19	
Anion Sum	3.60	RRV		meq/L		18-DEC-19	
Cation Sum	4.64	RRV		meq/L		18-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0079		0.0050	mg/L		13-DEC-19	R4945458
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-DEC-19	R4945458
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010	HTD	0.0010	mg/L		16-DEC-19	R4943502
<b>Oxidation redution potential by elect.</b>							
ORP	-143		-1000	mV		13-DEC-19	R4943038
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0024		0.0020	mg/L		16-DEC-19	R4943949
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	3.51		0.30	mg/L		13-DEC-19	R4945458
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	269	DLHC	20	mg/L		13-DEC-19	R4943921
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.7		1.0	mg/L		13-DEC-19	R4943988
<b>Turbidity</b>							
Turbidity	91.4		0.10	NTU		13-DEC-19	R4943687
<b>pH</b>							
pH	8.32		0.10	pH		13-DEC-19	R4943301
L2396081-3 GH_MW-TD_WG_2019-10-01_NP Sampled By: CLIENT on 12-DEC-19 @ 13:20 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.91	DTC	0.50	mg/L		18-DEC-19	R4945261
Total Kjeldahl Nitrogen	0.091		0.050	mg/L		17-DEC-19	R4944841
Mercury (Hg)-Total	<0.0020		0.0020	ug/L		17-DEC-19	R4945046
Total Organic Carbon	<0.50	DTC	0.50	mg/L		16-DEC-19	R4945261
<b>Dissolved Metals in Water</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-3 GH_MW-TD_WG_2019-10-01_NP							
Sampled By: CLIENT on 12-DEC-19 @ 13:20							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	15-DEC-19	15-DEC-19	R4944244
Dissolved Metals Filtration Location	FIELD					15-DEC-19	R4943534
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	17-DEC-19	17-DEC-19	R4944446
Dissolved Mercury Filtration Location	FIELD					17-DEC-19	R4944998
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					15-DEC-19	R4943534
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	15-DEC-19	15-DEC-19	R4944244
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Barium (Ba)-Dissolved	0.0232		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Boron (B)-Dissolved	0.366		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Cadmium (Cd)-Dissolved	0.530		0.0050	ug/L	15-DEC-19	15-DEC-19	R4944244
Calcium (Ca)-Dissolved	85.7		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Cobalt (Co)-Dissolved	0.47		0.10	ug/L	15-DEC-19	15-DEC-19	R4944244
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	15-DEC-19	15-DEC-19	R4944244
Iron (Fe)-Dissolved	0.246		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Lithium (Li)-Dissolved	0.0402		0.0010	mg/L	15-DEC-19	15-DEC-19	R4944244
Magnesium (Mg)-Dissolved	35.6		0.10	mg/L	15-DEC-19	15-DEC-19	R4944244
Manganese (Mn)-Dissolved	0.779		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Molybdenum (Mo)-Dissolved	0.00292		0.000050	mg/L	15-DEC-19	15-DEC-19	R4944244
Nickel (Ni)-Dissolved	0.00096		0.00050	mg/L	15-DEC-19	15-DEC-19	R4944244
Potassium (K)-Dissolved	2.42		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	15-DEC-19	17-DEC-19	R4945042
Silicon (Si)-Dissolved	6.93		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Sodium (Na)-Dissolved	28.0		0.050	mg/L	15-DEC-19	15-DEC-19	R4944244
Strontium (Sr)-Dissolved	1.10		0.00020	mg/L	15-DEC-19	15-DEC-19	R4944244
Thallium (Tl)-Dissolved	0.000191		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	15-DEC-19	15-DEC-19	R4944244
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	15-DEC-19	15-DEC-19	R4944244
Uranium (U)-Dissolved	0.00113		0.000010	mg/L	15-DEC-19	15-DEC-19	R4944244
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	15-DEC-19	15-DEC-19	R4944244
Zinc (Zn)-Dissolved	0.0013		0.0010	mg/L	15-DEC-19	15-DEC-19	R4944244
<b>Total Metals in Water</b>							
<b>Hardness</b>							
Hardness (as CaCO3)	361		0.50	mg/L		17-DEC-19	
<b>Total Be (Low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Total	<0.020		0.020	ug/L		16-DEC-19	R4944186
<b>Total Metals in Water by CRC ICPMS</b>							
Aluminum (Al)-Total	0.0031		0.0030	mg/L		16-DEC-19	R4944186
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		16-DEC-19	R4944186
Arsenic (As)-Total	0.00013		0.00010	mg/L		16-DEC-19	R4944186
Barium (Ba)-Total	0.0224		0.00010	mg/L		16-DEC-19	R4944186
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		16-DEC-19	R4944186
Boron (B)-Total	0.404		0.010	mg/L		16-DEC-19	R4944186
Cadmium (Cd)-Total	0.718		0.0050	ug/L		16-DEC-19	R4944186
Calcium (Ca)-Total	95.5		0.050	mg/L		16-DEC-19	R4944186
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		16-DEC-19	R4944186

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-3 GH_MW-TD_WG_2019-10-01_NP							
Sampled By: CLIENT on 12-DEC-19 @ 13:20							
Matrix: WG							
<b>Total Metals in Water by CRC ICPMS</b>							
Cobalt (Co)-Total	0.50		0.10	ug/L		16-DEC-19	R4944186
Copper (Cu)-Total	<0.00050		0.00050	mg/L		16-DEC-19	R4944186
Iron (Fe)-Total	0.297		0.010	mg/L		16-DEC-19	R4944186
Lead (Pb)-Total	<0.000050		0.000050	mg/L		16-DEC-19	R4944186
Lithium (Li)-Total	0.0423		0.0010	mg/L		16-DEC-19	R4944186
Magnesium (Mg)-Total	38.8		0.10	mg/L		16-DEC-19	R4944186
Manganese (Mn)-Total	0.861		0.00010	mg/L		16-DEC-19	R4944186
Molybdenum (Mo)-Total	0.00296		0.000050	mg/L		16-DEC-19	R4944186
Nickel (Ni)-Total	0.00100		0.00050	mg/L		16-DEC-19	R4944186
Potassium (K)-Total	2.45		0.050	mg/L		16-DEC-19	R4944186
Selenium (Se)-Total	<0.050		0.050	ug/L		16-DEC-19	R4944186
Silicon (Si)-Total	7.02		0.10	mg/L		16-DEC-19	R4944186
Silver (Ag)-Total	<0.000010		0.000010	mg/L		16-DEC-19	R4944186
Sodium (Na)-Total	30.0		0.050	mg/L		16-DEC-19	R4944186
Strontium (Sr)-Total	1.21		0.00020	mg/L		16-DEC-19	R4944186
Thallium (Tl)-Total	0.000193		0.000010	mg/L		16-DEC-19	R4944186
Tin (Sn)-Total	<0.00010		0.00010	mg/L		16-DEC-19	R4944186
Titanium (Ti)-Total	<0.010		0.010	mg/L		16-DEC-19	R4944186
Uranium (U)-Total	0.00111		0.000010	mg/L		16-DEC-19	R4944186
Vanadium (V)-Total	<0.00050		0.00050	mg/L		16-DEC-19	R4944186
Zinc (Zn)-Total	<0.0030		0.0030	mg/L		16-DEC-19	R4944186
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.8		1.0	mg/L		14-DEC-19	R4944069
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	360		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Carbonate (as CaCO3)	6.2		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		13-DEC-19	R4943301
Alkalinity, Total (as CaCO3)	367		1.0	mg/L		13-DEC-19	R4943301
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0925		0.0050	mg/L		13-DEC-19	R4943991
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		13-DEC-19	R4945458
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		13-DEC-19	R4945458
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	736		2.0	uS/cm		13-DEC-19	R4943301
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.288		0.020	mg/L		13-DEC-19	R4945458
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.9			%		18-DEC-19	
Anion Sum	9.04			meq/L		18-DEC-19	
Cation Sum	8.53			meq/L		18-DEC-19	
<b>Ion Balance Calculation</b>							
Ion Balance	94.3		-100	%		18-DEC-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0071		0.0050	mg/L		13-DEC-19	R4945458
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		13-DEC-19	R4945458
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-DEC-19	R4943502
<b>Oxidation redution potential by elect.</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2396081-3 GH_MW-TD_WG_2019-10-01_NP Sampled By: CLIENT on 12-DEC-19 @ 13:20 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	104		-1000	mV		13-DEC-19	R4943038
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-DEC-19	R4943949
<b>Sulfate in Water by IC</b> Sulfate (SO4)	81.8		0.30	mg/L		13-DEC-19	R4945458
<b>Total Dissolved Solids</b> Total Dissolved Solids	512	DLHC	20	mg/L		13-DEC-19	R4943921
<b>Total Suspended Solids</b> Total Suspended Solids	3.4		1.0	mg/L		13-DEC-19	R4943988
<b>Turbidity</b> Turbidity	0.98		0.10	NTU		13-DEC-19	R4943687
<b>pH</b> pH	8.31		0.10	pH		13-DEC-19	R4943301

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-U-CVAF-VA	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

GHO\_QTR\_GW\_2019-12

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 1 of 14

Client: TECK COAL LIMITED (GREENHILLS)  
 BOX 5000  
 ELKFORD BC V0B1H0

Contact: Leigh Stickney

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944069</b>							
<b>WG3243534-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	14-DEC-19
<b>WG3243534-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	14-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			107.2		%		85-115	13-DEC-19
<b>WG3242622-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.4	MB-LOR	mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944244</b>							
<b>WG3242900-3</b>	<b>DUP</b>	<b>L2396081-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	15-DEC-19
<b>WG3242900-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.3		%		80-120	15-DEC-19
<b>WG3242900-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-DEC-19
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.1		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944186</b>							
<b>WG3242820-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			106.0		%		80-120	16-DEC-19
<b>WG3242820-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	16-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945458</b>							
<b>WG3245381-2</b>	<b>LCS</b>							
Bromide (Br)			103.5		%		85-115	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4945261							
<b>WG3244196-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.4		%		80-120	16-DEC-19
<b>WG3244196-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4945261							
<b>WG3244196-6</b>	<b>LCS</b>							
Total Organic Carbon			99.5		%		80-120	16-DEC-19
<b>WG3244196-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4945458							
<b>WG3245381-2</b>	<b>LCS</b>							
Chloride (Cl)			98.3		%		90-110	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-DEC-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4943301							
<b>WG3242622-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.7		%		90-110	13-DEC-19
<b>WG3242622-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4945458							
<b>WG3245381-2</b>	<b>LCS</b>							
Fluoride (F)			102.5		%		90-110	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-DEC-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4944446							
<b>WG3244003-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			111.5		%		80-120	17-DEC-19
<b>WG3244003-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.4		%		80-120	17-DEC-19
<b>WG3244003-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-DEC-19
<b>WG3244003-9</b>	<b>MB</b>	<b>NP</b>						



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4944446							
<b>WG3244003-9 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-DEC-19
<b>HG-T-U-CVAF-VA</b> <b>Water</b>								
Batch	R4945046							
<b>WG3244751-2 LCS</b>								
Mercury (Hg)-Total			102.2		%		80-120	17-DEC-19
<b>WG3244751-1 MB</b>								
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	17-DEC-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch	R4944244							
<b>WG3242900-3 DUP</b>		<b>L2396081-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-DEC-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-DEC-19
Arsenic (As)-Dissolved		0.00017	0.00018		mg/L	3.5	20	15-DEC-19
Barium (Ba)-Dissolved		0.0978	0.0968		mg/L	1.0	20	15-DEC-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-DEC-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-DEC-19
Cadmium (Cd)-Dissolved		0.0000372	0.0000376		mg/L	1.2	20	15-DEC-19
Calcium (Ca)-Dissolved		123	120		mg/L	2.5	20	15-DEC-19
Chromium (Cr)-Dissolved		0.00025	0.00025		mg/L	1.7	20	15-DEC-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-DEC-19
Copper (Cu)-Dissolved		0.00531	0.00524		mg/L	1.4	20	15-DEC-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-DEC-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-DEC-19
Lithium (Li)-Dissolved		0.0080	0.0076		mg/L	5.6	20	15-DEC-19
Magnesium (Mg)-Dissolved		91.9	88.2		mg/L	4.1	20	15-DEC-19
Manganese (Mn)-Dissolved		0.00039	0.00042		mg/L	8.6	20	15-DEC-19
Molybdenum (Mo)-Dissolved		0.00243	0.00237		mg/L	2.2	20	15-DEC-19
Nickel (Ni)-Dissolved		0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-DEC-19
Potassium (K)-Dissolved		0.975	0.947		mg/L	2.9	20	15-DEC-19
Selenium (Se)-Dissolved		0.0805	0.0780		mg/L	3.3	20	15-DEC-19
Silicon (Si)-Dissolved		2.66	2.58		mg/L	2.9	20	15-DEC-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-DEC-19
Sodium (Na)-Dissolved		1.16	1.10		mg/L	5.2	20	15-DEC-19
Strontium (Sr)-Dissolved		0.141	0.141		mg/L	0.3	20	15-DEC-19



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944244</b>							
<b>WG3242900-3</b>	<b>DUP</b>	<b>L2396081-1</b>						
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-DEC-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-DEC-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-DEC-19
Uranium (U)-Dissolved		0.00500	0.00480		mg/L	4.1	20	15-DEC-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-DEC-19
Zinc (Zn)-Dissolved		0.0039	0.0041		mg/L	4.7	20	15-DEC-19
<b>WG3242900-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.4		%		80-120	15-DEC-19
Antimony (Sb)-Dissolved			95.1		%		80-120	15-DEC-19
Arsenic (As)-Dissolved			98.2		%		80-120	15-DEC-19
Barium (Ba)-Dissolved			96.4		%		80-120	15-DEC-19
Bismuth (Bi)-Dissolved			93.0		%		80-120	15-DEC-19
Boron (B)-Dissolved			103.6		%		80-120	15-DEC-19
Cadmium (Cd)-Dissolved			98.8		%		80-120	15-DEC-19
Calcium (Ca)-Dissolved			95.8		%		80-120	15-DEC-19
Chromium (Cr)-Dissolved			99.3		%		80-120	15-DEC-19
Cobalt (Co)-Dissolved			98.1		%		80-120	15-DEC-19
Copper (Cu)-Dissolved			105.1		%		80-120	15-DEC-19
Iron (Fe)-Dissolved			108.3		%		80-120	15-DEC-19
Lead (Pb)-Dissolved			95.5		%		80-120	15-DEC-19
Lithium (Li)-Dissolved			95.3		%		80-120	15-DEC-19
Magnesium (Mg)-Dissolved			99.8		%		80-120	15-DEC-19
Manganese (Mn)-Dissolved			102.4		%		80-120	15-DEC-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	15-DEC-19
Nickel (Ni)-Dissolved			98.5		%		80-120	15-DEC-19
Potassium (K)-Dissolved			102.0		%		80-120	15-DEC-19
Selenium (Se)-Dissolved			102.4		%		80-120	15-DEC-19
Silicon (Si)-Dissolved			104.3		%		60-140	15-DEC-19
Sodium (Na)-Dissolved			103.4		%		80-120	15-DEC-19
Strontium (Sr)-Dissolved			98.0		%		80-120	15-DEC-19
Thallium (Tl)-Dissolved			97.8		%		80-120	15-DEC-19
Tin (Sn)-Dissolved			96.0		%		80-120	15-DEC-19
Titanium (Ti)-Dissolved			94.7		%		80-120	15-DEC-19
Uranium (U)-Dissolved			101.0		%		80-120	15-DEC-19



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944244</b>							
<b>WG3242900-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			100.3		%		80-120	15-DEC-19
Zinc (Zn)-Dissolved			96.6		%		80-120	15-DEC-19
<b>WG3242900-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-DEC-19



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	17-DEC-19
Antimony (Sb)-Dissolved			103.9		%		80-120	17-DEC-19
Arsenic (As)-Dissolved			98.5		%		80-120	17-DEC-19
Barium (Ba)-Dissolved			102.2		%		80-120	17-DEC-19
Bismuth (Bi)-Dissolved			104.9		%		80-120	17-DEC-19
Boron (B)-Dissolved			105.8		%		80-120	17-DEC-19
Cadmium (Cd)-Dissolved			96.8		%		80-120	17-DEC-19
Calcium (Ca)-Dissolved			107.2		%		80-120	17-DEC-19
Chromium (Cr)-Dissolved			100.8		%		80-120	17-DEC-19
Cobalt (Co)-Dissolved			98.4		%		80-120	17-DEC-19
Copper (Cu)-Dissolved			95.1		%		80-120	17-DEC-19
Iron (Fe)-Dissolved			97.5		%		80-120	17-DEC-19
Lead (Pb)-Dissolved			99.9		%		80-120	17-DEC-19
Lithium (Li)-Dissolved			105.8		%		80-120	17-DEC-19
Magnesium (Mg)-Dissolved			96.3		%		80-120	17-DEC-19
Manganese (Mn)-Dissolved			96.4		%		80-120	17-DEC-19
Molybdenum (Mo)-Dissolved			103.6		%		80-120	17-DEC-19
Nickel (Ni)-Dissolved			96.6		%		80-120	17-DEC-19
Potassium (K)-Dissolved			102.7		%		80-120	17-DEC-19
Selenium (Se)-Dissolved			98.8		%		80-120	17-DEC-19
Silicon (Si)-Dissolved			114.0		%		60-140	17-DEC-19
Silver (Ag)-Dissolved			103.3		%		80-120	17-DEC-19
Sodium (Na)-Dissolved			98.6		%		80-120	17-DEC-19
Strontium (Sr)-Dissolved			105.3		%		80-120	17-DEC-19
Thallium (Tl)-Dissolved			103.1		%		80-120	17-DEC-19
Tin (Sn)-Dissolved			93.6		%		80-120	17-DEC-19
Titanium (Ti)-Dissolved			95.5		%		80-120	17-DEC-19
Uranium (U)-Dissolved			101.1		%		80-120	17-DEC-19
Vanadium (V)-Dissolved			101.8		%		80-120	17-DEC-19
Zinc (Zn)-Dissolved			90.0		%		80-120	17-DEC-19
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945014</b>							
<b>WG3243951-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-DEC-19
<b>Batch</b>	<b>R4945042</b>							
<b>WG3242900-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			101.3		%		80-120	17-DEC-19

**MET-T-CCMS-VA**

**Water**



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4944186</b>							
<b>WG3242820-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			103.9		%		80-120	16-DEC-19
Antimony (Sb)-Total			100.8		%		80-120	16-DEC-19
Arsenic (As)-Total			100.3		%		80-120	16-DEC-19
Barium (Ba)-Total			95.2		%		80-120	16-DEC-19
Bismuth (Bi)-Total			110.7		%		80-120	16-DEC-19
Boron (B)-Total			109.2		%		80-120	16-DEC-19
Cadmium (Cd)-Total			95.8		%		80-120	16-DEC-19
Calcium (Ca)-Total			102.8		%		80-120	16-DEC-19
Chromium (Cr)-Total			105.6		%		80-120	16-DEC-19
Cobalt (Co)-Total			101.9		%		80-120	16-DEC-19
Copper (Cu)-Total			99.4		%		80-120	16-DEC-19
Iron (Fe)-Total			104.1		%		80-120	16-DEC-19
Lead (Pb)-Total			98.1		%		80-120	16-DEC-19
Lithium (Li)-Total			107.0		%		80-120	16-DEC-19
Magnesium (Mg)-Total			102.8		%		80-120	16-DEC-19
Manganese (Mn)-Total			102.8		%		80-120	16-DEC-19
Molybdenum (Mo)-Total			99.6		%		80-120	16-DEC-19
Nickel (Ni)-Total			102.5		%		80-120	16-DEC-19
Potassium (K)-Total			103.6		%		80-120	16-DEC-19
Selenium (Se)-Total			97.4		%		80-120	16-DEC-19
Silicon (Si)-Total			105.3		%		80-120	16-DEC-19
Silver (Ag)-Total			99.4		%		80-120	16-DEC-19
Sodium (Na)-Total			110.0		%		80-120	16-DEC-19
Strontium (Sr)-Total			99.7		%		80-120	16-DEC-19
Thallium (Tl)-Total			96.8		%		80-120	16-DEC-19
Tin (Sn)-Total			96.8		%		80-120	16-DEC-19
Titanium (Ti)-Total			100.5		%		80-120	16-DEC-19
Uranium (U)-Total			98.1		%		80-120	16-DEC-19
Vanadium (V)-Total			100.3		%		80-120	16-DEC-19
Zinc (Zn)-Total			97.4		%		80-120	16-DEC-19
<b>WG3242820-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-DEC-19



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4944186</b>							
<b>WG3242820-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	16-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	16-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	16-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	16-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	16-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	16-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	16-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	16-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	16-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	16-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	16-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	16-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	16-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	16-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	16-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	16-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	16-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-DEC-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4943991</b>							
<b>WG3242302-22</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	13-DEC-19
<b>WG3242302-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-DEC-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4945458							
<b>WG3245381-2</b>	<b>LCS</b>							
Nitrite (as N)			103.2		%		90-110	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-DEC-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4945458							
<b>WG3245381-2</b>	<b>LCS</b>							
Nitrate (as N)			101.9		%		90-110	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-DEC-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4943038							
<b>WG3242214-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	13-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4943949							
<b>WG3243460-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.3		%		80-120	16-DEC-19
<b>WG3243460-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-14</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4943502							
<b>WG3242568-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.5		%		80-120	14-DEC-19
<b>WG3242568-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-DEC-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4945458							
<b>WG3245381-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.4		%		90-110	15-DEC-19
<b>WG3245381-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4945458							
WG3245381-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-DEC-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4943921							
WG3241859-5	LCS							
Total Dissolved Solids			107.0		%		85-115	13-DEC-19
WG3241859-4	MB							
Total Dissolved Solids			<10		mg/L		10	13-DEC-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4944841							
WG3244543-10	LCS							
Total Kjeldahl Nitrogen			99.5		%		75-125	17-DEC-19
WG3244543-14	LCS							
Total Kjeldahl Nitrogen			92.0		%		75-125	17-DEC-19
WG3244543-2	LCS							
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
WG3244543-6	LCS							
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
WG3244543-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
WG3244543-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
WG3244543-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
WG3244543-9	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4943988							
WG3241858-2	LCS							
Total Suspended Solids			99.8		%		85-115	13-DEC-19
WG3241858-1	MB							
Total Suspended Solids			<1.0		mg/L		1	13-DEC-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4943687							
WG3242343-2	LCS							
Turbidity			96.0		%		85-115	13-DEC-19
WG3242343-1	MB							



## Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-CL	Water							
Batch	R4943687							
WG3242343-1	MB							
Turbidity			<0.10		NTU		0.1	13-DEC-19

# Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 13 of 14

## Legend:

---

Limit ALS Control Limit (Data Quality Objectives)  
DUP Duplicate  
RPD Relative Percent Difference  
N/A Not Available  
LCS Laboratory Control Sample  
SRM Standard Reference Material  
MS Matrix Spike  
MSD Matrix Spike Duplicate  
ADE Average Desorption Efficiency  
MB Method Blank  
IRM Internal Reference Material  
CRM Certified Reference Material  
CCV Continuing Calibration Verification  
CVS Calibration Verification Standard  
LCSD Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2396081

Report Date: 20-DEC-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	12-DEC-19 11:00	13-DEC-19 09:00	0.25	22	hours	EHTR-FM
	2	12-DEC-19 12:50	13-DEC-19 09:00	0.25	20	hours	EHTR-FM
	3	12-DEC-19 13:20	13-DEC-19 09:00	0.25	20	hours	EHTR-FM
pH							
	1	12-DEC-19 11:00	13-DEC-19 11:30	0.25	24	hours	EHTR-FM
	2	12-DEC-19 12:50	13-DEC-19 11:30	0.25	23	hours	EHTR-FM
	3	12-DEC-19 13:20	13-DEC-19 11:30	0.25	22	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	2	12-DEC-19 12:50	16-DEC-19 14:00	3	4	days	EHT

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2396081 were received on 13-DEC-19 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **GHO\_QTR\_GW\_2019-12-12**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Greenhills Operation			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Leigh Stickney			Lab Contact	Lyudmyla Shvets			Email 1:	Leigh.Stickney@teck.com	X	X	X
Email	Leigh.Stickney@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2:	Laura.Ferguson@teck.com	X	X	X
Address	P.O. BOX 5000			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com			X
City	Elkford	Province	BC	City	Calgary	Province	AB	Email 4:	jaydon.francis@teck.com	X	X	X
Postal Code	VOB1H0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	Brendan.Peachey@teck.com	X	X	X
Phone Number	250-865-3048			Phone Number	403 407 1794			PO number	510013			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-U-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	TECKCOAL-MET-T-VA
GH_MW-PC_WG_2019-10-01_NP	GH_MW-PC	WG		12/12/2019	11:00	G	7	1	1	1	1	1	1	1
GH_MW-RLP-ID_WG_2019-10-01_NP	GH_MW-RLP-ID	WG		12/12/2019	12:50	G	7	1	1	1	1	1	1	1
GH_MW-TD_WG_2019-10-01_NP	GH_MW-TD	WG		12/12/2019	13:20	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
5 Day Rush			<i>[Signature]</i>	12/13 8:30

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Sampler's Signature	Date/Time
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS		

58



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 21-AUG-19  
Report Date: 27-AUG-19 15:40 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2333917  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2333917-1 WATER 20-AUG-19 09:15 GH_MW-MC- 1D_WG_2019_08_ 20_NP	L2333917-2 WATER 20-AUG-19 12:20 GH_MW-WILLOW- 1D_WG_2019_08_ 20_NP	L2333917-3 WATER 20-AUG-19 11:15 GH_MW-WILLOW- 2S_WG_2019_08_ 20_NP	L2333917-4 WATER 20-AUG-19 14:30 GH_MW-WILLOW- 2D_WG_2019_08_ 20_NP	L2333917-5 WATER 20-AUG-19 15:50 GH_MW-WILLOW- 3S_WG_2019_08_ 20_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	385	450	370	585	448
	Hardness (as CaCO3) (mg/L)	137	156	202	159	265
	pH (pH)	8.20	8.24	8.19	8.24	8.17
	ORP (mV)	308	434	432	430	326
	Total Suspended Solids (mg/L)	<1.0	30.5	1.3	7.3	15.0
	Total Dissolved Solids (mg/L)	222 <sup>DLHC</sup>	264 <sup>DLHC</sup>	215 <sup>DLHC</sup>	347 <sup>DLHC</sup>	261 <sup>DLHC</sup>
	Turbidity (NTU)	0.68	43.3	2.83	11.0	15.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.9	3.0	5.8	2.5	8.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	187	243	196	320	237
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	187	243	196	320	237
	Ammonia as N (mg/L)	0.0344	0.0926	0.0058	0.155	<0.0050
	Bicarbonate (HCO3) (mg/L)	228	296	239	390	289
	Bromide (Br) (mg/L)	0.121	0.061	<0.050	0.074	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	15.8	7.34	<0.50	10.1	<0.50
	Fluoride (F) (mg/L)	0.754	0.885	0.146	0.888	0.121
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	110	107	100	109	108
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051	0.0771	0.0248	0.0826
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0771	0.0234	0.0826
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	0.0014	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.189	0.147	0.334	0.085
	Total Nitrogen (mg/L)	<0.050	0.189	0.224	0.359	0.168
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0038	0.0092	0.0065	0.0051
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0687	0.0114	0.0566	0.0125
	Sulfate (SO4) (mg/L)	1.48	9.89	17.8	5.55	16.1
	Anion Sum (meq/L)	4.24	5.31	4.30	6.84	5.09
	Cation Sum (meq/L)	4.65	5.66	4.30	7.44	5.50
	Cation - Anion Balance (%)	4.6	3.2	0.0	4.2	3.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.79	3.30	2.01	1.74
	Total Organic Carbon (mg/L)	<0.50	1.44	3.80	2.09	2.20
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0043	0.0035	0.0029	0.0020

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2333917-1 WATER 20-AUG-19 09:15 GH_MW-MC- 1D_WG_2019_08_ 20_NP	L2333917-2 WATER 20-AUG-19 12:20 GH_MW-WILLOW- 1D_WG_2019_08_ 20_NP	L2333917-3 WATER 20-AUG-19 11:15 GH_MW-WILLOW- 2S_WG_2019_08_ 20_NP	L2333917-4 WATER 20-AUG-19 14:30 GH_MW-WILLOW- 2D_WG_2019_08_ 20_NP	L2333917-5 WATER 20-AUG-19 15:50 GH_MW-WILLOW- 3S_WG_2019_08_ 20_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011	0.00016	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00071	0.00051	0.00026	0.00077	0.00014
	Barium (Ba)-Dissolved (mg/L)	0.816	1.48	0.162	0.663	0.211
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.081	0.150	0.015	0.220	0.012
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	0.0000157	0.0000279	0.0000201
	Calcium (Ca)-Dissolved (mg/L)	30.8	34.1	53.7	37.0	69.7
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00013	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	0.00014	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	0.00040	0.00033	0.00027
	Iron (Fe)-Dissolved (mg/L)	0.068	0.338	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0801	0.0856	0.0114	0.175	0.0076
	Magnesium (Mg)-Dissolved (mg/L)	14.7	17.1	16.5	16.2	22.1
	Manganese (Mn)-Dissolved (mg/L)	0.126	0.0735	0.00014	0.0178	0.00156
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00645	0.00597	0.000858	0.00416	0.000636
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00062	<0.00050	0.00167	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.36	1.05	1.12	2.02	0.90
	Selenium (Se)-Dissolved (mg/L)	<0.000050	<0.000050	0.000940	0.000301	0.00106
	Silicon (Si)-Dissolved (mg/L)	3.27	3.26	3.00	3.64	4.15
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	42.9	57.5	5.38	96.7	4.11
	Strontium (Sr)-Dissolved (mg/L)	0.417	0.675	0.130	0.346	0.143
	Sulfur (S)-Dissolved (mg/L)	<0.50	3.60	6.15	1.98	5.85
	Thallium (Tl)-Dissolved (mg/L)	0.000026	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000060	0.000246	0.000371	0.000686	0.000397
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00054	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0012	0.0040	<0.0010	0.0017	0.0395
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333917-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 1 of 13

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768538</b>							
<b>WG3143216-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	23-AUG-19
<b>WG3143216-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.4		%		85-115	23-AUG-19
<b>WG3143216-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>WG3143216-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Alkalinity, Total (as CaCO3)		187	193		mg/L	3.3	20	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.7		%		80-120	23-AUG-19
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			90.7		%		80-120	23-AUG-19
<b>WG3141725-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-19
<b>WG3141725-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-AUG-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Bicarbonate (HCO3)		228	235		mg/L	3.3	20	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	23-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Bromide (Br)		0.121	0.119		mg/L	2.0	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-10</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Bromide (Br)			114.3		%		75-125	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-3</b>	<b>DUP</b>	<b>L2333917-4</b>						
Dissolved Organic Carbon		2.01	1.88		mg/L	6.5	20	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.0		%		80-120	25-AUG-19
<b>WG3143147-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.8		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-4</b>	<b>MS</b>	<b>L2333917-5</b>						
Dissolved Organic Carbon			100.2		%		70-130	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-3</b>	<b>DUP</b>	<b>L2333917-4</b>						
Total Organic Carbon		2.09	1.87		mg/L	11	20	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Total Organic Carbon			109.4		%		80-120	25-AUG-19
<b>WG3143147-6</b>	<b>LCS</b>							
Total Organic Carbon			105.8		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-4</b>	<b>MS</b>	<b>L2333917-5</b>						
Total Organic Carbon			102.3		%		70-130	25-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Chloride (Cl)		15.8	15.8		mg/L	0.2	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Chloride (Cl)			113.7		%		75-125	22-AUG-19
<b>CO3-CL</b>								
<b>Batch R4768557</b>								
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	23-AUG-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4768557</b>								
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Conductivity (@ 25C)		385	385		uS/cm	0.0	10	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.4		%		90-110	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Fluoride (F)		0.754	0.747		mg/L	0.9	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Fluoride (F)			113.4		%		75-125	22-AUG-19
<b>HG-D-CVAA-CL</b>								
<b>Batch R4767663</b>								
<b>WG3142122-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.4		%		80-120	23-AUG-19
<b>WG3142122-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767663</b>							
<b>WG3142122-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	23-AUG-19
<b>WG3142122-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-AUG-19
<b>WG3142122-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-AUG-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			95.1		%		80-120	23-AUG-19
Antimony (Sb)-Dissolved			102.6		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			100.0		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			88.5		%		80-120	23-AUG-19
Bismuth (Bi)-Dissolved			92.4		%		80-120	23-AUG-19
Boron (B)-Dissolved			90.5		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	23-AUG-19
Calcium (Ca)-Dissolved			96.2		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			92.5		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			90.3		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			88.8		%		80-120	23-AUG-19
Iron (Fe)-Dissolved			92.6		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			92.5		%		80-120	23-AUG-19
Lithium (Li)-Dissolved			100.7		%		80-120	23-AUG-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	23-AUG-19
Manganese (Mn)-Dissolved			92.6		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			104.5		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			90.7		%		80-120	23-AUG-19
Phosphorus (P)-Dissolved			105.3		%		70-130	23-AUG-19
Potassium (K)-Dissolved			99.3		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			100.3		%		80-120	23-AUG-19
Silicon (Si)-Dissolved			103.8		%		60-140	23-AUG-19
Silver (Ag)-Dissolved			94.9		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			94.1		%		80-120	23-AUG-19
Strontium (Sr)-Dissolved			93.9		%		80-120	23-AUG-19
Sulfur (S)-Dissolved			97.3		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			91.3		%		80-120	23-AUG-19





## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-2</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			105.7		%		80-120	23-AUG-19
Titanium (Ti)-Dissolved			97.3		%		80-120	23-AUG-19
Uranium (U)-Dissolved			81.4		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			92.6		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			90.0		%		80-120	23-AUG-19
Zirconium (Zr)-Dissolved			104.0		%		80-120	23-AUG-19
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			92.6		%		80-120	23-AUG-19
Antimony (Sb)-Dissolved			104.6		%		80-120	23-AUG-19
Arsenic (As)-Dissolved			98.4		%		80-120	23-AUG-19
Barium (Ba)-Dissolved			88.7		%		80-120	23-AUG-19
Bismuth (Bi)-Dissolved			92.7		%		80-120	23-AUG-19
Boron (B)-Dissolved			83.6		%		80-120	23-AUG-19
Cadmium (Cd)-Dissolved			95.5		%		80-120	23-AUG-19
Calcium (Ca)-Dissolved			91.6		%		80-120	23-AUG-19
Chromium (Cr)-Dissolved			92.8		%		80-120	23-AUG-19
Cobalt (Co)-Dissolved			91.1		%		80-120	23-AUG-19
Copper (Cu)-Dissolved			90.1		%		80-120	23-AUG-19
Iron (Fe)-Dissolved			92.9		%		80-120	23-AUG-19
Lead (Pb)-Dissolved			94.1		%		80-120	23-AUG-19
Lithium (Li)-Dissolved			99.0		%		80-120	23-AUG-19
Magnesium (Mg)-Dissolved			95.0		%		80-120	23-AUG-19
Manganese (Mn)-Dissolved			90.5		%		80-120	23-AUG-19
Molybdenum (Mo)-Dissolved			101.1		%		80-120	23-AUG-19
Nickel (Ni)-Dissolved			90.5		%		80-120	23-AUG-19
Phosphorus (P)-Dissolved			103.1		%		70-130	23-AUG-19
Potassium (K)-Dissolved			98.6		%		80-120	23-AUG-19
Selenium (Se)-Dissolved			100.3		%		80-120	23-AUG-19
Silicon (Si)-Dissolved			100.8		%		60-140	23-AUG-19
Silver (Ag)-Dissolved			91.3		%		80-120	23-AUG-19
Sodium (Na)-Dissolved			98.7		%		80-120	23-AUG-19
Strontium (Sr)-Dissolved			89.0		%		80-120	23-AUG-19
Sulfur (S)-Dissolved			96.6		%		80-120	23-AUG-19
Thallium (Tl)-Dissolved			92.0		%		80-120	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-6</b>	<b>LCS</b>	<b>TMRM</b>						
Tin (Sn)-Dissolved			98.7		%		80-120	23-AUG-19
Titanium (Ti)-Dissolved			96.2		%		80-120	23-AUG-19
Uranium (U)-Dissolved			84.9		%		80-120	23-AUG-19
Vanadium (V)-Dissolved			92.4		%		80-120	23-AUG-19
Zinc (Zn)-Dissolved			90.4		%		80-120	23-AUG-19
Zirconium (Zr)-Dissolved			100.0		%		80-120	23-AUG-19
<b>WG3141725-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-1</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	23-AUG-19
<b>WG3141725-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767338</b>							
<b>WG3141725-5</b>	<b>MB</b>							
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-AUG-19
Zirconium (Zr)-Dissolved			<0.000060		mg/L		0.00006	23-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768758</b>							
<b>WG3141851-18</b>	<b>LCS</b>							
Ammonia as N			103.4		%		85-115	23-AUG-19
<b>WG3141851-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	23-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrite (as N)			105.9		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Nitrite (as N)			117.6		%		75-125	22-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Nitrate (as N)			113.4		%		75-125	22-AUG-19
<b>OH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	23-AUG-19
<b>WG3143229-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	23-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769169</b>							
<b>WG3143970-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	26-AUG-19
<b>WG3143970-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767467</b>							
<b>WG3141919-30</b>	<b>LCS</b>							
Phosphorus (P)-Total			112.9		%		80-120	23-AUG-19
<b>WG3141919-29</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-6</b>	<b>DUP</b>	<b>L2333917-1</b>						
pH		8.20	8.22	J	pH	0.02	0.2	23-AUG-19
<b>WG3143229-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4765949</b>							
<b>WG3140634-26</b>	<b>DUP</b>	<b>L2333917-1</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3140634-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	22-AUG-19
<b>WG3140634-25</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.7		%		80-120	22-AUG-19
<b>WG3140634-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3140634-6</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-11</b>	<b>DUP</b>	<b>L2333917-1</b>						
Sulfate (SO4)		1.48	1.46		mg/L	1.5	20	22-AUG-19
<b>WG3141969-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
<b>WG3141969-12</b>	<b>MS</b>	<b>L2333917-1</b>						
Sulfate (SO4)			111.2		%		75-125	22-AUG-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768900</b>							
<b>WG3141391-14</b>	<b>LCS</b>							
Total Dissolved Solids			100.7		%		85-115	23-AUG-19
<b>WG3141391-13</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	23-AUG-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768755</b>							
<b>WG3143573-3</b>	<b>DUP</b>	<b>L2333917-1</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3143573-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.7		%		75-125	26-AUG-19
<b>WG3143573-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	26-AUG-19
<b>WG3143573-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.3		%		75-125	26-AUG-19
<b>WG3143573-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.2		%		75-125	26-AUG-19
<b>WG3143573-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	26-AUG-19
<b>WG3143573-4</b>	<b>MS</b>	<b>L2333917-1</b>						
Total Kjeldahl Nitrogen			114.0		%		70-130	26-AUG-19
<b>TSS-L-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4768837							
<b>WG3143202-4</b>	<b>LCS</b>							
Total Suspended Solids			103.2		%		85-115	26-AUG-19
<b>WG3143202-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4765274							
<b>WG3140978-12</b>	<b>DUP</b>	<b>L2333917-2</b>						
Turbidity		43.3	45.5		NTU	5.0	15	22-AUG-19
<b>WG3140978-11</b>	<b>LCS</b>							
Turbidity			94.0		%		85-115	22-AUG-19
<b>WG3140978-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-AUG-19

# Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2333917

Report Date: 27-AUG-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	20-AUG-19 09:15	26-AUG-19 14:45	0.25	150	hours	EHTR-FM
	2	20-AUG-19 12:20	26-AUG-19 17:15	0.25	149	hours	EHTR-FM
	3	20-AUG-19 11:15	26-AUG-19 17:15	0.25	150	hours	EHTR-FM
	4	20-AUG-19 14:30	26-AUG-19 17:15	0.25	147	hours	EHTR-FM
	5	20-AUG-19 15:50	26-AUG-19 17:15	0.25	145	hours	EHTR-FM
pH							
	1	20-AUG-19 09:15	23-AUG-19 13:00	0.25	76	hours	EHTR-FM
	2	20-AUG-19 12:20	23-AUG-19 13:00	0.25	73	hours	EHTR-FM
	3	20-AUG-19 11:15	23-AUG-19 13:00	0.25	74	hours	EHTR-FM
	4	20-AUG-19 14:30	23-AUG-19 13:00	0.25	71	hours	EHTR-FM
	5	20-AUG-19 15:50	23-AUG-19 13:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333917 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2333917-COFC

Number: 19 -

Page 1 of 2

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																
Company: SNC-Lavalin - Nelson		Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>																
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box		3 day [P3-25%] <input type="checkbox"/>																
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>																
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'		EMERGENCY: 1 Business day [E1 - 100%] <input type="checkbox"/>																
City/Province: Nelson, BC		'Genevieve.Pomerleau', 'Vicky.Lipinski@snc-lavalin.com'		Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] <input type="checkbox"/>																
Postal Code: V1L 4C6		Teck - 'Cam.Jaeger', 'Jenny.Hutchison@teck.com'		Date and Time Required for all E&P TATs:																
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		For tests that can not be performed according to the service level selected, you will be contacted.																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Analysis Request																
Company:		Emails: Katrina.Cheung@snc-lavalin.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Contact:		payables@snc-lavalin.com		F/P P F/P P																
Project Information		Oil and Gas Required Fields (client use)		DOC (C-DIS-ORG-LOW-CL) <input checked="" type="checkbox"/>																
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#		TOC (C-TOT-ORG-LOW-CL) <input checked="" type="checkbox"/>																
Job #: 658004		Major/Minor Code: Routing Code:		BCMDG D-Met + Hg (MET-D-BCMDG-CL) <input checked="" type="checkbox"/>																
PO / AFE: 658004		Requisitioner:		Total N Calc. (N-T-CALC-CL) <input checked="" type="checkbox"/>																
LSD:		Location:		Nitrate + Nitrite Calc. (N2N3-CALC-CL) <input checked="" type="checkbox"/>																
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1795		Teck Routine (TECKCOAL-ROUTINE-CL) <input checked="" type="checkbox"/>																
		Sampler: AH/IC B. Hansen		TKN (TKN-L-F-CL) <input checked="" type="checkbox"/>																
				Bicarbonate (BIC-CL) <input checked="" type="checkbox"/>																
				Carbonate (CO3-CL) <input checked="" type="checkbox"/>																
				Hydroxide (OH-CL) <input checked="" type="checkbox"/>																
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met + Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS		
	<del>GH_MW-MC-16_WG_2019_0_NP</del>	<del>GH_MW-MC-16</del>			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW-MC-1D_WG_2019_08_20NP	GH_MW-MC-1D	20-AUG-19	9:15	Water	R	R	R	R	R	R	R	R	R	R			5		
	<del>GH_MW-MC-26_WG_2019_0_NP</del>	<del>GH_MW-MC-26</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW-MC-2D_WG_2019_0_NP</del>	<del>GH_MW-MC-2D</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW-Willow-1S_WG_2019_0_NP</del>	<del>GH_MW-Willow-1S</del>			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW-Willow-1D_WG_2019_08_20NP	GH_MW-Willow-1D	20-AUG-19	12:20	Water	R	R	R	R	R	R	R	R	R	R			5		
	GH_MW-Willow-2S_WG_2019_08_20NP	GH_MW-Willow-2S	20-AUG-19	11:15	Water	R	R	R	R	R	R	R	R	R	R			5		
	GH_MW-Willow-2D_WG_2019_08_20NP	GH_MW-Willow-2D	20-AUG-19	14:30	Water	R	R	R	R	R	R	R	R	R	R			5		
	GH_MW-Willow-3S_WG_2019_08_20NP	GH_MW-Willow-3S	20-AUG-19	15:50	Water	R	R	R	R	R	R	R	R	R	R			5		
	<del>GH_MW-Willow-3D_WG_2019_0_NP</del>	<del>GH_MW-Willow-3D</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW-Wolf-1S_WG_2019_0_NP</del>	<del>GH_MW-Wolf-1S</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW-Wolf-1D_WG_2019_0_NP</del>	<del>GH_MW-Wolf-1D</del>			Water	R	R	R	R	R	R	R	R	R	R					
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)														
Are samples taken from a Regulated DW System? <input type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com				Frozen <input type="checkbox"/>			SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/>			Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			Cooling Initiated <input type="checkbox"/>		
Are samples for human consumption/ use? <input type="checkbox"/>		Teck Facility Name: (please select the applicable Facility)				INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C											
		3HO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				40C														
SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (lab use only)					FINAL SHIPMENT RECEPTION (lab use only)										
Released by: [Signature]		Date: Aug 20, 2019		Time: 16:00		Received by: [Signature]		Date: 8/21		Time: 09:00		Received by: [Signature]		Date:		Time:				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 30-OCT-19  
Report Date: 03-DEC-19 17:33 (MT)  
Version: FINAL REV. 5

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2374306  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Comments: 02-DEC-2019 - Sample IDs and Location Codes corrected.

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2374306-1 WATER 29-OCT-19 10:38 GH_MW-MC- 1S_WG_2019_10_ 29_NP	L2374306-2 WATER 29-OCT-19 15:46 GH_MW-WILLOW- 1D_WG_2019_10_ 29_NP	L2374306-3 WATER 29-OCT-19 16:10 GH_MW-WILLOW- 2D_WG_2019_10_ 29_NP	L2374306-4 WATER 29-OCT-19 14:15 GH_MW-WILLOW- 3S_WG_2019_10_ 29_NP	L2374306-5 WATER 29-OCT-19 12:50 GH_MW-WILLOW- 3D_WG_2019_10_ 29_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	263	379	591	375	394
	Hardness (as CaCO3) (mg/L)	180	151	132	269	208
	pH (pH)	7.89	8.05	8.12	7.79	7.87
	ORP (mV)	482	380	443	443	428
	Total Suspended Solids (mg/L)	<1.0	59.2	35.2	19.2	13.4
	Total Dissolved Solids (mg/L)	191 <sup>DLHC</sup>	275 <sup>DLHC</sup>	433 <sup>DLHC</sup>	255 <sup>DLHC</sup>	277 <sup>DLHC</sup>
	Turbidity (NTU)	0.23	21.4	82.3	31.3	20.5
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.6	<1.0	<1.0	1.5	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	151	239	374	249	264
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	151	239	374	249	264
	Ammonia as N (mg/L)	<0.0050	0.0890	0.242	0.0067	0.261
	Bicarbonate (HCO3) (mg/L)	184	291	457	303	322
	Bromide (Br) (mg/L)	<0.050	<0.050	0.066	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.60	8.66	14.9	<0.50	1.36
	Fluoride (F) (mg/L)	0.214	0.988	1.42	0.189	0.763
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	104	100	96.5	105	102
	Nitrate and Nitrite (as N) (mg/L)	0.0852	<0.0051	<0.0051	0.0572	<0.0051
	Nitrate (as N) (mg/L)	0.0852	<0.0050	<0.0050	0.0572	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.112	0.327	0.076	0.267
	Total Nitrogen (mg/L)	0.085	0.112	0.327	0.134	0.267
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	0.0024	0.0071	0.0035	0.0049
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0549	0.0668	0.0253	0.0260
	Sulfate (SO4) (mg/L)	21.3	10.3	1.06	15.6	9.62
	Anion Sum (meq/L)	3.49	5.28	8.00	5.31	5.55
	Cation Sum (meq/L)	3.63	5.28	7.72	5.55	5.65
	Cation - Anion Balance (%)	2.0	0.0	-1.8	2.2	0.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	1.40	1.27	0.89
	Total Organic Carbon (mg/L)	<0.50	<0.50	2.68	1.53	0.95
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0033	0.148	0.0022	0.0024

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2374306-6	L2374306-7	L2374306-8	L2374306-9	L2374306-10
					WATER	WATER	WATER	WATER	WATER
		29-OCT-19	11:00		29-OCT-19	29-OCT-19	29-OCT-19	29-OCT-19	29-OCT-19
					12:00	13:50	14:00	12:10	
					GH_MW_LC1-A_WG_2019_10_29_NP	GH_MW_LC1-B_WG_2019_10_29_NP	GH_MW_LC2-A_WG_2019_10_29_NP	GH_MW_LC2-B_WG_2019_10_29_NP	GH_MW_MC10-A_WG_2019_10_29_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	275	328	286	279	298			
	Hardness (as CaCO3) (mg/L)	194	183	191	186	198			
	pH (pH)	7.86	8.03	8.27	8.29	8.26			
	ORP (mV)	405	242	321	355	330			
	Total Suspended Solids (mg/L)	<1.0	24.1	<1.0	<1.0	<1.0			
	Total Dissolved Solids (mg/L)	193 <sup>DLHC</sup>	234 <sup>DLHC</sup>	193 <sup>DLHC</sup>	194 <sup>DLHC</sup>	201 <sup>DLHC</sup>			
	Turbidity (NTU)	0.21	22.1	0.25	0.14	0.21			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	2.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	160	167	150	147	161			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	4.8	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	160	167	150	152	161			
	Ammonia as N (mg/L)	<0.0050	0.0313	<0.0050	0.0066	<0.0050			
	Bicarbonate (HCO3) (mg/L)	195	204	183	179	196			
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Chloride (Cl) (mg/L)	<0.50	4.00	<0.50	0.79	<0.50			
	Fluoride (F) (mg/L)	0.205	0.548	0.202	0.214	0.203			
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0			
	Ion Balance (%)	106	103	111	109	109			
	Nitrate and Nitrite (as N) (mg/L)	0.0697	<0.0051	0.0709	0.0794	0.0807			
	Nitrate (as N) (mg/L)	0.0697	<0.0050	0.0709	0.0794	0.0807			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.085	<0.050	<0.050	<0.050			
	Total Nitrogen (mg/L)	0.070	0.085	0.071	0.079	0.081			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0017	0.0025	0.0015	<0.0010	0.0013			
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0104	<0.0020	<0.0020	<0.0020			
	Sulfate (SO4) (mg/L)	22.3	41.0	22.2	20.5	21.7			
	Anion Sum (meq/L)	3.68	4.34	3.48	3.50	3.68			
	Cation Sum (meq/L)	3.91	4.48	3.85	3.80	4.01			
	Cation - Anion Balance (%)	3.1	1.7	5.1	4.1	4.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	1.87	<0.50	<0.50	<0.50			
	Total Organic Carbon (mg/L)	<0.50	2.09	<0.50	<0.50	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0017	0.0031	0.0018	<0.0010	0.0011			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

03-DEC-19 17:33 (MT)

Version: FINAL REV. 5

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2374306-1	L2374306-2	L2374306-3	L2374306-4	L2374306-5
					WATER	WATER	WATER	WATER	WATER
		29-OCT-19	10:38		29-OCT-19	29-OCT-19	29-OCT-19	29-OCT-19	29-OCT-19
					15:46	16:10	14:15	12:50	
					GH_MW-MC-1S_WG_2019_10_29_NP	GH_MW-WILLOW-1D_WG_2019_10_29_NP	GH_MW-WILLOW-2D_WG_2019_10_29_NP	GH_MW-WILLOW-3S_WG_2019_10_29_NP	GH_MW-WILLOW-3D_WG_2019_10_29_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00041	0.00096	0.00015	0.00193			
	Barium (Ba)-Dissolved (mg/L)	0.0544	1.70	0.972	0.219	0.347			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.150	0.332	0.012	0.132			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000115	0.0000171	<0.0000050			
	Calcium (Ca)-Dissolved (mg/L)	53.3	32.5	27.7	71.1	46.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00024	<0.00010	0.00035	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	0.00013	<0.00010	0.00052			
	Copper (Cu)-Dissolved (mg/L)	0.00032	<0.00020	0.00164	0.00057	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.482	0.096	<0.010	0.492			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000108	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0016	0.0855	0.248	0.0072	0.0715			
	Magnesium (Mg)-Dissolved (mg/L)	11.3	16.9	15.3	22.3	22.2			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0635	0.0232	0.00089	0.231			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00108	0.00397	0.00402	0.000570	0.00493			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	0.36	0.90	2.13	0.90	1.71			
	Selenium (Se)-Dissolved (mg/L)	0.000914	<0.000050	<0.000050	0.000663	<0.000050			
	Silicon (Si)-Dissolved (mg/L)	1.94	3.32	4.56	4.43	4.73			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	0.660	50.9	115	3.43	32.6			
	Strontium (Sr)-Dissolved (mg/L)	0.209	0.655	0.455	0.133	0.648			
	Sulfur (S)-Dissolved (mg/L)	7.38	3.79	<0.50	5.60	3.47			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	0.00295	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.000701	0.000178	0.000610	0.000392	0.00195			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00070	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0012	0.0020	0.0272	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

03-DEC-19 17:33 (MT)

Version: FINAL REV. 5

Sample ID Description Sampled Date Sampled Time Client ID	L2374306-6 WATER 29-OCT-19 11:00 GH_MW_LC1- A_WG_2019_10_2 9_NP	L2374306-7 WATER 29-OCT-19 12:00 GH_MW_LC1- B_WG_2019_10_2 9_NP	L2374306-8 WATER 29-OCT-19 13:50 GH_MW_LC2- A_WG_2019_10_2 9_NP	L2374306-9 WATER 29-OCT-19 14:00 GH_MW_LC2- B_WG_2019_10_2 9_NP	L2374306-10 WATER 29-OCT-19 12:10 GH_MW_MC10- A_WG_2019_10_2 9_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00019	0.00017	0.00019	0.00012	0.00026
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00027	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0577	0.0664	0.0571	0.0728	0.0640
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.024	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000100	<0.0000050	0.0000081	0.0000060	0.0000124
	Calcium (Ca)-Dissolved (mg/L)	57.9	48.2	56.3	52.0	58.5
	Chromium (Cr)-Dissolved (mg/L)	0.00024	<0.00010	0.00027	0.00025	0.00027
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00021	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00041	<0.00020	0.00041	0.00046	0.00036
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0027	0.0093	0.0026	0.0051	0.0038
	Magnesium (Mg)-Dissolved (mg/L)	11.9	15.3	12.1	13.7	12.7
	Manganese (Mn)-Dissolved (mg/L)	0.00034	0.148	0.00030	0.00038	0.00065
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00145	0.00470	0.00149	0.00143	0.00163
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.54	1.26	0.54	0.56	0.67
	Selenium (Se)-Dissolved (mg/L)	0.000960	0.000106	0.00100	0.000925	0.00105
	Silicon (Si)-Dissolved (mg/L)	2.06	4.17	2.03	2.11	2.28
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.687	18.0	0.672	1.64	0.719
	Strontium (Sr)-Dissolved (mg/L)	0.187	0.360	0.183	0.165	0.166
	Sulfur (S)-Dissolved (mg/L)	7.94	14.2	7.70	7.02	7.74
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000780	0.00108	0.000799	0.000995	0.000818
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2374306-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			



## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 1 of 10

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4891686</b>							
<b>WG3206876-18 DUP</b>		<b>L2374306-3</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	30-OCT-19
<b>WG3206876-14 LCS</b>								
Acidity (as CaCO3)			99.6		%		85-115	30-OCT-19
<b>WG3206876-17 LCS</b>								
Acidity (as CaCO3)			99.6		%		85-115	30-OCT-19
<b>WG3206876-13 MB</b>								
Acidity (as CaCO3)			1.5		mg/L		2	30-OCT-19
<b>WG3206876-16 MB</b>								
Acidity (as CaCO3)			1.6		mg/L		2	30-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4891346</b>							
<b>WG3206836-18 DUP</b>		<b>L2374306-10</b>						
Alkalinity, Total (as CaCO3)		161	160		mg/L	0.2	20	30-OCT-19
<b>WG3206836-17 LCS</b>								
Alkalinity, Total (as CaCO3)			97.4		%		85-115	30-OCT-19
<b>WG3206836-20 LCS</b>								
Alkalinity, Total (as CaCO3)			100.2		%		85-115	30-OCT-19
<b>WG3206836-16 MB</b>								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-19
<b>WG3206836-19 MB</b>								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4895089</b>							
<b>WG3207978-10 LCS</b>		<b>TMRM</b>						
Beryllium (Be)-Dissolved			95.1		%		80-120	31-OCT-19
<b>WG3207978-9 MB</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-OCT-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4891346</b>							
<b>WG3206836-18 DUP</b>		<b>L2374306-10</b>						
Bicarbonate (HCO3)		196	195		mg/L	0.3	20	30-OCT-19
<b>WG3206836-16 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	30-OCT-19
<b>WG3206836-19 MB</b>								
Bicarbonate (HCO3)			<5.0		mg/L		5	30-OCT-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
Batch R4892326								
<b>WG3207097-10</b>	<b>LCS</b>							
Bromide (Br)			104.1		%		85-115	30-OCT-19
<b>WG3207097-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
Batch R4896463								
<b>WG3209237-7</b>	<b>DUP</b>	<b>L2374306-2</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-NOV-19
<b>WG3209237-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.0		%		80-120	02-NOV-19
<b>WG3209237-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			104.0		%		80-120	02-NOV-19
<b>WG3209237-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-NOV-19
<b>WG3209237-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-NOV-19
<b>WG3209237-8</b>	<b>MS</b>	<b>L2374306-3</b>						
Dissolved Organic Carbon			92.4		%		70-130	02-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
Batch R4896463								
<b>WG3209237-7</b>	<b>DUP</b>	<b>L2374306-2</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	02-NOV-19
<b>WG3209237-2</b>	<b>LCS</b>							
Total Organic Carbon			104.0		%		80-120	02-NOV-19
<b>WG3209237-6</b>	<b>LCS</b>							
Total Organic Carbon			106.7		%		80-120	02-NOV-19
<b>WG3209237-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-NOV-19
<b>WG3209237-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-NOV-19
<b>WG3209237-8</b>	<b>MS</b>	<b>L2374306-3</b>						
Total Organic Carbon			94.7		%		70-130	02-NOV-19
<b>CL-IC-N-CL</b>								
Batch R4892326								
<b>WG3207097-10</b>	<b>LCS</b>							
Chloride (Cl)			107.6		%		90-110	30-OCT-19
<b>WG3207097-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	30-OCT-19



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CO3-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4891346</b>							
<b>WG3206836-18</b>	<b>DUP</b>	<b>L2374306-10</b>						
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	20	30-OCT-19
<b>WG3206836-16</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	30-OCT-19
<b>WG3206836-19</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	30-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4891346</b>							
<b>WG3206836-18</b>	<b>DUP</b>	<b>L2374306-10</b>						
Conductivity (@ 25C)		298	314		uS/cm	5.2	10	30-OCT-19
<b>WG3206836-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.8		%		90-110	30-OCT-19
<b>WG3206836-20</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.4		%		90-110	30-OCT-19
<b>WG3206836-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-19
<b>WG3206836-19</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4892326</b>							
<b>WG3207097-10</b>	<b>LCS</b>							
Fluoride (F)			109.2		%		90-110	30-OCT-19
<b>WG3207097-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-OCT-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4896838</b>							
<b>WG3209694-3</b>	<b>DUP</b>	<b>L2374306-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209694-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			116.0		%		80-120	03-NOV-19
<b>WG3209694-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.0		%		80-120	03-NOV-19
<b>WG3209694-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	03-NOV-19
<b>WG3209694-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	03-NOV-19
<b>WG3209694-4</b>	<b>MS</b>	<b>L2374306-3</b>						
Mercury (Hg)-Dissolved			84.1		%		70-130	03-NOV-19



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4895089</b>							
<b>WG3207978-10</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			102.2		%		80-120	31-OCT-19
Antimony (Sb)-Dissolved			105.5		%		80-120	31-OCT-19
Arsenic (As)-Dissolved			101.4		%		80-120	31-OCT-19
Barium (Ba)-Dissolved			101.8		%		80-120	31-OCT-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	31-OCT-19
Boron (B)-Dissolved			92.9		%		80-120	31-OCT-19
Cadmium (Cd)-Dissolved			100.5		%		80-120	31-OCT-19
Calcium (Ca)-Dissolved			99.5		%		80-120	31-OCT-19
Chromium (Cr)-Dissolved			101.2		%		80-120	31-OCT-19
Cobalt (Co)-Dissolved			100.6		%		80-120	31-OCT-19
Copper (Cu)-Dissolved			97.9		%		80-120	31-OCT-19
Iron (Fe)-Dissolved			92.8		%		80-120	31-OCT-19
Lead (Pb)-Dissolved			98.0		%		80-120	31-OCT-19
Lithium (Li)-Dissolved			98.9		%		80-120	31-OCT-19
Magnesium (Mg)-Dissolved			102.2		%		80-120	31-OCT-19
Manganese (Mn)-Dissolved			97.5		%		80-120	31-OCT-19
Molybdenum (Mo)-Dissolved			100.3		%		80-120	31-OCT-19
Nickel (Ni)-Dissolved			96.9		%		80-120	31-OCT-19
Phosphorus (P)-Dissolved			110.2		%		70-130	31-OCT-19
Potassium (K)-Dissolved			97.7		%		80-120	31-OCT-19
Selenium (Se)-Dissolved			97.5		%		80-120	31-OCT-19
Silicon (Si)-Dissolved			105.4		%		60-140	31-OCT-19
Silver (Ag)-Dissolved			94.9		%		80-120	31-OCT-19
Sodium (Na)-Dissolved			97.3		%		80-120	31-OCT-19
Strontium (Sr)-Dissolved			96.3		%		80-120	31-OCT-19
Sulfur (S)-Dissolved			107.3		%		80-120	31-OCT-19
Thallium (Tl)-Dissolved			99.6		%		80-120	31-OCT-19
Tin (Sn)-Dissolved			99.6		%		80-120	31-OCT-19
Titanium (Ti)-Dissolved			87.9		%		80-120	31-OCT-19
Uranium (U)-Dissolved			93.8		%		80-120	31-OCT-19
Vanadium (V)-Dissolved			101.0		%		80-120	31-OCT-19
Zinc (Zn)-Dissolved			101.3		%		80-120	31-OCT-19
Zirconium (Zr)-Dissolved			94.1		%		80-120	31-OCT-19
<b>WG3207978-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4895089</b>							
<b>WG3207978-9</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-OCT-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-OCT-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-OCT-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-OCT-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-OCT-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-OCT-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-OCT-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-OCT-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-OCT-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-OCT-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	31-OCT-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-OCT-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-OCT-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-OCT-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-OCT-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-OCT-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-OCT-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	31-OCT-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-OCT-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-OCT-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-OCT-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-OCT-19
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	31-OCT-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4898562</b>							
<b>WG3209139-11</b>	<b>DUP</b>	<b>L2374306-6</b>						
Ammonia as N		<0.0050	0.0055	RPD-NA	mg/L	N/A	20	02-NOV-19
<b>WG3209139-15</b>	<b>DUP</b>	<b>L2374306-9</b>						
Ammonia as N		0.0066	0.0071		mg/L	7.3	20	02-NOV-19
<b>WG3209139-7</b>	<b>DUP</b>	<b>L2374306-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-NOV-19
<b>WG3209139-10</b>	<b>LCS</b>							
Ammonia as N			103.9		%		85-115	02-NOV-19
<b>WG3209139-14</b>	<b>LCS</b>							
Ammonia as N			106.9		%		85-115	02-NOV-19
<b>WG3209139-2</b>	<b>LCS</b>							
Ammonia as N			100.7		%		85-115	02-NOV-19
<b>WG3209139-6</b>	<b>LCS</b>							
Ammonia as N			100.6		%		85-115	02-NOV-19
<b>WG3209139-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-19
<b>WG3209139-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-19
<b>WG3209139-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-19
<b>WG3209139-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-19
<b>WG3209139-12</b>	<b>MS</b>	<b>L2374306-6</b>						
Ammonia as N			106.0		%		75-125	02-NOV-19
<b>WG3209139-16</b>	<b>MS</b>	<b>L2374306-9</b>						
Ammonia as N			92.7		%		75-125	02-NOV-19
<b>WG3209139-8</b>	<b>MS</b>	<b>L2374306-1</b>						
Ammonia as N			107.9		%		75-125	02-NOV-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4892326</b>							
<b>WG3207097-10</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	30-OCT-19
<b>WG3207097-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-OCT-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
Batch R4892326								
WG3207097-10	LCS							
Nitrate (as N)			106.1		%		90-110	30-OCT-19
Batch R4892326								
WG3207097-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-OCT-19
<b>OH-CL</b>								
Batch R4891346								
WG3206836-18	DUP	L2374306-10						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	30-OCT-19
Batch R4891346								
WG3206836-16	MB							
Hydroxide (OH)			<5.0		mg/L		5	30-OCT-19
Batch R4891346								
WG3206836-19	MB							
Hydroxide (OH)			<5.0		mg/L		5	30-OCT-19
<b>ORP-CL</b>								
Batch R4891052								
WG3206879-7	CRM	CL-ORP						
ORP			214		mV		210-230	30-OCT-19
Batch R4891052								
WG3206879-9	CRM	CL-ORP						
ORP			223		mV		210-230	30-OCT-19
<b>P-T-L-COL-CL</b>								
Batch R4891928								
WG3207054-22	LCS							
Phosphorus (P)-Total			105.4		%		80-120	31-OCT-19
Batch R4891928								
WG3207054-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-OCT-19
<b>PH-CL</b>								
Batch R4891346								
WG3206836-18	DUP	L2374306-10						
pH		8.26	8.27	J	pH	0.01	0.2	30-OCT-19
Batch R4891346								
WG3206836-17	LCS							
pH			7.04		pH		6.9-7.1	30-OCT-19
Batch R4891346								
WG3206836-20	LCS							
pH			7.02		pH		6.9-7.1	30-OCT-19
<b>PO4-DO-L-COL-CL</b>								
Batch R4890387								
WG3206051-14	LCS							
Orthophosphate-Dissolved (as P)			100.6		%		80-120	30-OCT-19
Batch R4890387								
WG3206051-13	MB							



## Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4890387							
<b>WG3206051-13 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4892326							
<b>WG3207097-10 LCS</b>								
Sulfate (SO4)			108.7		%		90-110	30-OCT-19
<b>WG3207097-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	30-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4899012							
<b>WG3209631-2 LCS</b>								
Total Dissolved Solids			102.5		%		85-115	04-NOV-19
<b>WG3209631-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	04-NOV-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4891357							
<b>WG3206908-10 LCS</b>								
Total Kjeldahl Nitrogen			96.3		%		75-125	31-OCT-19
<b>WG3206908-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4898646							
<b>WG3209204-6 LCS</b>								
Total Suspended Solids			96.5		%		85-115	03-NOV-19
<b>WG3209204-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4891077							
<b>WG3206874-11 LCS</b>								
Turbidity			95.0		%		85-115	30-OCT-19
<b>WG3206874-10 MB</b>								
Turbidity			<0.10		NTU		0.1	30-OCT-19

# Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2374306

Report Date: 03-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	29-OCT-19 10:38	30-OCT-19 15:00	0.25	28	hours	EHTR-FM
	2	29-OCT-19 15:46	30-OCT-19 15:00	0.25	23	hours	EHTR-FM
	3	29-OCT-19 16:10	30-OCT-19 15:00	0.25	23	hours	EHTR-FM
	4	29-OCT-19 14:15	30-OCT-19 15:00	0.25	25	hours	EHTR-FM
	5	29-OCT-19 12:50	30-OCT-19 15:00	0.25	26	hours	EHTR-FM
	6	29-OCT-19 11:00	30-OCT-19 15:00	0.25	28	hours	EHTR-FM
	7	29-OCT-19 12:00	30-OCT-19 15:00	0.25	27	hours	EHTR-FM
	8	29-OCT-19 13:50	30-OCT-19 16:30	0.25	27	hours	EHTR-FM
	9	29-OCT-19 14:00	30-OCT-19 16:30	0.25	26	hours	EHTR-FM
	10	29-OCT-19 12:10	30-OCT-19 16:30	0.25	28	hours	EHTR-FM
pH							
	1	29-OCT-19 10:38	30-OCT-19 15:00	0.25	28	hours	EHTR-FM
	2	29-OCT-19 15:46	30-OCT-19 15:00	0.25	23	hours	EHTR-FM
	3	29-OCT-19 16:10	30-OCT-19 15:00	0.25	23	hours	EHTR-FM
	4	29-OCT-19 14:15	30-OCT-19 15:00	0.25	25	hours	EHTR-FM
	5	29-OCT-19 12:50	30-OCT-19 15:00	0.25	26	hours	EHTR-FM
	6	29-OCT-19 11:00	30-OCT-19 15:00	0.25	28	hours	EHTR-FM
	7	29-OCT-19 12:00	30-OCT-19 15:00	0.25	27	hours	EHTR-FM
	8	29-OCT-19 13:50	30-OCT-19 15:00	0.25	25	hours	EHTR-FM
	9	29-OCT-19 14:00	30-OCT-19 15:00	0.25	25	hours	EHTR-FM
	10	29-OCT-19 12:10	30-OCT-19 15:00	0.25	27	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2374306 were received on 30-OCT-19 08:55.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																			
Company: SNC-Lavalin -Nelson		Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																			
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>EMERGENCY</b> 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>		<b>1 Business day [E1 - 100%]</b> <input type="checkbox"/>									<b>Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]</b> <input type="checkbox"/>								
Phone: Tel.:604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked																					
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																					
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'		Date and Time Required for all E&P TATs:																			
City/Province: Nelson, BC		'Genevieve.Pomerleau', 'Vicky.Lipinski@snc-lavalin.com'		For tests that can not be performed according to the service level selected, you will be contacted.																			
Postal Code: V1L 4C6		Teck - 'Jennifer.Kropp', 'Scott.Dressler@teck.com'		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																			
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>																					
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																					
Company: _____		Emails: Katrina.Cheung@snc-lavalin.com																					
Contact: _____		payables@snc-lavalin.com																					
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																					
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: _____ PO# _____																					
Job #: 658004		Major/Minor Code: _____ Routing Code: _____																					
PO / AFE: 658004		Requisitioner: _____																					
LSD: _____		Location: _____																					
<b>ALS Lab Work Order # (lab use only):</b>		ALS Contact: Ryan Smyth 403-407-1795		Sampler: AH/C/JVG/RS																			
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-C-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS					
1	GH_MW-MC-1S_WG_2019_10_29_NP	GH_MW-MC-1S	29-Oct-19	10:38	Water	R	R	R	R	R	R	R	R	R	R			5					
	GH_MW-MC-1D_WG_2019_10_29_NP	GH_MW-MC-1D			Water	R	R	R	R	R	R	R	R	R	R								
	GH_MW-MC-2S_WG_2019_10_29_NP	GH_MW-MC-2S			Water	R	R	R	R	R	R	R	R	R	R								
	GH_MW-MC-2D_WG_2019_10_29_NP	GH_MW-MC-2D			Water	R	R	R	R	R	R	R	R	R	R								
	GH_MW-Willow-1S_WG_2019_10_29_NP	GH_MW-Willow-1S			Water	R	R	R	R	R	R	R	R	R	R								
2	GH_MW-Willow-1D_WG_2019_10_29_NP	GH_MW-Willow-1D	29-Oct-19	15:46	Water	R	R	R	R	R	R	R	R	R	R			5					
	GH_MW-Willow-2S_WG_2019_10_29_NP	GH_MW-Willow-2S			Water	R	R	R	R	R	R	R	R	R	R								
	GH_MW-Willow-2D_WG_2019_10_29_NP	GH_MW-Willow-2D	29-Oct-19	16:10	Water	R	R	R	R	R	R	R	R	R	R			5					
	GH_MW-Willow-3S_WG_2019_10_29_NP	GH_MW-Willow-3S	29-Oct-19	14:15	Water	R	R	R	R	R	R	R	R	R	R			5					
	GH_MW-Willow-3D_WG_2019_10_29_NP	GH_MW-Willow-3D	29-Oct-19	12:50	Water	R	R	R	R	R	R	R	R	R	R			5					
	GH_MW-WOLF-1S_WG_2019_10_29_NP	GH_MW-WOLF-1S			Water	R	R	R	R	R	R	R	R	R	R								
	GH_MW-WOLF-1D_WG_2019_10_29_NP	GH_MW-WOLF-1D			Water	R	R	R	R	R	R	R	R	R	R								
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																					
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																			
		Teck Facility Name: (please select the applicable Facility)		Cooling Initiated <input checked="" type="checkbox"/>																			
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		INITIAL COOLER TEMPERATURES °C: 2 FINAL COOLER TEMPERATURES °C: _____																			
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by: Isabel Craig		Date: Oct 29, 2019		Time: 17:00		Received by: [Signature]		Date: 10/30/19		Time: 8:55		Received by: _____				Date: _____				Time: _____			



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2374306-COFC

COC Number: 19 -

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report			<b>Report Format / Distribution</b>				<b>Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company: SNC-Lavalin - Nelson			Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)				Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Katrina Cheung			Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				4 day [P4-20%] <input type="checkbox"/>		EMERGENCY 1 Business day [E1 - 100%] <input type="checkbox"/>											
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576			Compare Results to Criteria on Report - provide details below if box checked				3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/>											
Company address below will appear on the final report			Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				2 day [P2-50%] <input type="checkbox"/>		(Laboratory opening fees may apply)											
Street: 520 Lake Street			Emails: SNC - 'Katrina.Cheung'				Date and Time Required for all E&P TATs:													
City/Province: Nelson, BC			'Genevieve.Pomerleau', Vicky.Lipinski@sncclavalin.com				For tests that can not be performed according to the service level selected, you will be contacted.													
Postal Code: V1L 4C6			Teck - 'Jennifer.Kropp', Scott.Dressler@teck.com				<b>Analysis Request</b>													
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			Invoice Distribution				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				F/P	P	F/P											
Company:			Emails: Katrina.Cheung@sncclavalin.com				DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2NO3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS	
Contact:			payables@sncclavalin.com																	
Project Information			Oil and Gas Required Fields (client use)																	
ALS Account # / Quote #: MOR125 / Q72340			AFE/Cost Center:		PO#															
Job #: 658004			Major/Minor Code:		Routing Code:															
PO / AFE: 658004			Requisitioner:																	
LSD:			Location:																	
ALS Lab Work Order # (lab use only):			ALS Contact: Ryan Smyth 403-407-1795		Sampler: AH/IC/JVG/RS															
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2NO3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS		
	GH_MW_WoLF-2S_WG-2019__NP	GH_MW_WoLF-2S			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_WoLF-2D_WG-2019__NP	GH_MW_WoLF-2D			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_FC1_WG-2019__NP	GH_MW_FC1			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_FC2_WG-2019__NP	GH_MW_FC2			Water	R	R	R	R	R	R	R	R	R	R					
6	GH_MW_LC1-A_NP_2019_10_29_NP	GH_MW_LC1-A	29-Oct-19	11:00	Water	R	R	R	R	R	R	R	R	R	R			5		
7	GH_MW_LC1-B_NP_2019_10_29_NP	GH_MW_LC1-B	29-Oct-19	12:00	Water	R	R	R	R	R	R	R	R	R	R			5		
8	GH_MW_LC2-A_NP_2019_10_29_NP	GH_MW_LC2-A	29-Oct-19	13:50	Water	R	R	R	R	R	R	R	R	R	R			5		
9	GH_MW_LC2-B_NP_2019_10_29_NP	GH_MW_LC2-B	29-Oct-19	14:00	Water	R	R	R	R	R	R	R	R	R	R			5		
	GH_MW_WG1-A_NP_2019__NP	GH_MW_WG1-A			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_WG1-B_NP_2019__NP	GH_MW_WG1-B			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_WG1-C_NP_2019__NP	GH_MW_WG1-C			Water	R	R	R	R	R	R	R	R	R	R					
Drinking Water (DW) Samples <sup>1</sup> (client use)			Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				SAMPLE CONDITION AS RECEIVED (lab use only)													
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS				Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
							Cooling Initiated <input type="checkbox"/>													
							INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C								
SHIPPING RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)													
Released by: Isabel Craig			Date: Oct 29, 2019				Received by:													
Time: 17:00							Date:													

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FR001

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.  
1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																																																																																																																																																										
Company: SNC-Lavalin ~Nelson		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																																																										
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		<p><small>PRIORITY (Business Days)</small></p> <b>4 day [P4-20%]</b> <input type="checkbox"/> <b>3 day [P3-25%]</b> <input type="checkbox"/> <b>2 day [P2-50%]</b> <input type="checkbox"/>		<p><small>EMERGENCY</small></p> <b>1 Business day [E1 - 100%]</b> <input type="checkbox"/> <b>Same Day, Weekend or Statutory holiday [E2 -200%</b> <b>(Laboratory opening fees may apply) ]</b> <input type="checkbox"/>																																																																																																																																																								
Phone: Tel.:604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked																																																																																																																																																												
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<b>Date and Time Required for all E&amp;P TATs:</b>																																																																																																																																																										
Street: 520 Lake Street	Emails: SNC - 'Katrina.Cheung'		For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																																																											
City/Province: Nelson, BC	'Genevieve,Pomerleau', Vicky.Lipinski@snc-lavalin.com		<b>Analysis Request</b>																																																																																																																																																											
Postal Code: V1L 4C6	Teck - 'Jennifer.Kropp', Scott.Dressler@teck.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																																																																																											
Invoice To Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>F/P</td><td>P</td><td>F/P</td><td></td><td></td><td></td><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>						F/P	P	F/P				P																																																																																																																																														
F/P	P	F/P										P																																																																																																																																																		
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																																																																																																																																																												
Company:		Emails: Katrina.Cheung@snc-lavalin.com																																																																																																																																																												
Contact:		payables@snc-lavalin.com																																																																																																																																																												
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																																																																																																																																																												
ALS Account # / Quote #: MOR125 / Q72340		A/E/Cost Center:	PO#:																																																																																																																																																											
Job #: 658004		Major/Minor Code:	Routing Code:																																																																																																																																																											
PO / A/E: 658004		Requisitioner:																																																																																																																																																												
LSD:		Location:																																																																																																																																																												
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1795	Sampler: AH/C/JVG/RS																																																																																																																																																											
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met.+Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)*	*Remove CL-CATIONS-D-CCMS (REF) +	*Remove MET-D-CCMS-CL +	*Remove IONBALANCE-BC-CL +	*Remove TECKCOAL-IONBAL-CL	SAMPLES ON HOLD		Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS																																																																																																																																						
10	GH_MW_MC10-A_WG_2019___NP	GH_MW_MC10-A			Water	R	R	R	R	R	R	R	R	R	R																																																																																																																																															
	GH_MW_MC10-A_WG_2019_10_29_NP	GH_MW_MC10-A	29-Oct-19	12:10	Water	R	R	R	R	R	R	R	R	R	R										5																																																																																																																																					
	GH_MW_MC10-A_WG_2019___NP	GH_MW_MC10-A			Water	R	R	R	R	R	R	R	R	R	R																																																																																																																																															
	GH_MW_MC10-B_WG_2019___NP	GH_MW_MC10-B			Water		R		R	R		R	R	R	R	R	R	R	R	R																																																																																																																																										
	GH_MW_MC10-C_WG_2019___NP	GH_MW_MC10-C			Water	R	R	R	R	R	R	R	R	R	R																																																																																																																																															
	GH_MW_MC10-D_WG_2019___NP	GH_MW_MC10-D			Water	R		R																																																																																																																																																						
					Water																																																																																																																																																									
					Water																																																																																																																																																									
					Water																																																																																																																																																									
					Water																																																																																																																																																									
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>			<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																																																																																																																																																								
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO			<b>PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com</b>			Frozen <input type="checkbox"/>						SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>						Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																																																																																																																																												
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO			Teck Facility Name: (please select the applicable Facility)			Cooling Initiated <input type="checkbox"/>						INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C																																																																																																																																												
			GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS																																																																																																																																																											
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																																																																																																																						
Released by: Isabel Craig		Date: Oct 29, 2019		Time: 17:00		Received by:		Date:		Time:		Received by:		Date:		Time:																																																																																																																																														



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 10-DEC-19  
Report Date: 19-DEC-19 13:53 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2394569  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

19-DEC-19 13:53 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2394569-1	L2394569-2	L2394569-3	L2394569-4	L2394569-5	
					WG	WG	WG	WG	WG	
		09-DEC-19	12:00		09-DEC-19	09-DEC-19	09-DEC-19	09-DEC-19	09-DEC-19	
					15:00	13:45	15:45	12:00		
					GH_MW_MC-2S_WG_2019_12_09_NP	GH_MW_MC1-A_WG_2019_12_09_NP	GH_MW_MC1-B_WG_2019_12_09_NP	GH_MW_MC1-C_WG_2019_12_09_NP	GH_MW_MC10-A_WG_2019_12_09_NP	
Grouping	Analyte									
<b>WATER</b>										
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	603	379	323	331	600				
	Hardness (as CaCO3) (mg/L)	344	165	168	166	345				
	pH (pH)	8.02	8.37	8.10	8.38	8.02				
	ORP (mV)	444	368	496	441	492				
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.2	<1.0	<1.0				
	Total Dissolved Solids (mg/L)	442 <sup>DLHC</sup>	208 <sup>DLHC</sup>	192 <sup>DLHC</sup>	190 <sup>DLHC</sup>	404 <sup>DLHC</sup>				
	Turbidity (NTU)	1.14	1.09	2.69	<0.10	0.90				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.0	3.1	3.9	3.5	12.4				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	227	153	146	138	220				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	9.4	<1.0	9.8	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	227	162	146	148	220				
	Ammonia as N (mg/L)	<0.0050	0.0995	0.0373	<0.0050	<0.0050				
	Bicarbonate (HCO3) (mg/L)	277	186	178	168	268				
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050				
	Carbonate (CO3) (mg/L)	<5.0	5.6	<5.0	5.9	<5.0				
	Chloride (Cl) (mg/L)	3.09	1.59	0.82	<0.50	3.08				
	Fluoride (F) (mg/L)	0.106	0.247	0.158	0.119	0.104				
	Hydroxide (OH) (mg/L)	<5.0 <sup>RRV</sup>	<5.0	<5.0	<5.0	<5.0 <sup>RRV</sup>				
	Ion Balance (%)	120 <sup>RRV</sup>	94.9	103	96.9	123 <sup>RRV</sup>				
	Nitrate and Nitrite (as N) (mg/L)	0.273	<0.0051	0.0780	0.112	0.270				
	Nitrate (as N) (mg/L)	0.273	<0.0050	0.0780	0.112	0.270				
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010				
	Total Kjeldahl Nitrogen (mg/L)	0.089	0.113	<0.050	<0.050	0.062				
	Total Nitrogen (mg/L)	0.362	0.113	0.078	0.112	0.332				
	Orthophosphate-Dissolved (as P) (mg/L)	0.0069	0.0030	0.0021	0.0019	0.0067				
	Phosphorus (P)-Total (mg/L)	0.0081 <sup>DLM</sup>	0.0057 <sup>DLM</sup>	0.0055 <sup>DLM</sup>	<0.0020	0.0083 <sup>DLM</sup>				
	Sulfate (SO4) (mg/L)	88.1 <sup>RRV</sup>	39.1	22.6	24.0	88.0 <sup>RRV</sup>				
	Anion Sum (meq/L)	6.48 <sup>RRV</sup>	4.11	3.43	3.47	6.33 <sup>RRV</sup>				
	Cation Sum (meq/L)	7.78 <sup>RRV</sup>	3.90	3.54	3.36	7.79 <sup>RRV</sup>				
	Cation - Anion Balance (%)	9.1	-2.6	1.6	-1.6	10.3				
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.65	<0.50	<0.50	<0.50	1.80			
		Total Organic Carbon (mg/L)	1.76	<0.50	<0.50	<0.50	1.69			
	<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD				
Aluminum (Al)-Dissolved (mg/L)		0.0039	0.0018	0.0017	0.0022	0.0043				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2394569-6	L2394569-7	L2394569-8			
		Description	WG	WG	WG			
		Sampled Date	09-DEC-19	09-DEC-19	09-DEC-19			
		Sampled Time	12:30	16:00	12:35			
		Client ID	GH_MW_MC10- B_WG_2019_12_0 9_NP	GH_MW_MC10- C_WG_2019_12_0 9_NP	GH_MW_MC10- D_WG_2019_12_0 9_NP			
Grouping	Analyte							
<b>WATER</b>								
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	<2.0	<2.0					
	Hardness (as CaCO3) (mg/L)		<0.50	<0.50				
	pH (pH)	5.33	5.36					
	ORP (mV)	488	459					
	Total Suspended Solids (mg/L)	<1.0	<1.0					
	Total Dissolved Solids (mg/L)	<10	<10					
	Turbidity (NTU)	<0.10	<0.10					
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.5 <sup>RRV</sup>	2.2 <sup>RRV</sup>					
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0	<1.0					
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0					
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0					
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0 <sup>RRVA P</sup>	<1.0 <sup>RRVA P</sup>					
	Ammonia as N (mg/L)	<0.0050	<0.0050					
	Bicarbonate (HCO3) (mg/L)	<5.0	<5.0					
	Bromide (Br) (mg/L)	<0.050	<0.050					
	Carbonate (CO3) (mg/L)	<5.0	<5.0					
	Chloride (Cl) (mg/L)	<0.50	<0.50					
	Fluoride (F) (mg/L)	<0.020	<0.020					
	Hydroxide (OH) (mg/L)	<5.0	<5.0					
	Ion Balance (%)		0.0					
	Nitrate and Nitrite (as N) (mg/L)	<0.0051	<0.0051					
	Nitrate (as N) (mg/L)	<0.0050	<0.0050					
	Nitrite (as N) (mg/L)	<0.0010	<0.0010					
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050					
	Total Nitrogen (mg/L)	<0.050	<0.050					
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010					
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020					
	Sulfate (SO4) (mg/L)	<0.30	<0.30					
	Anion Sum (meq/L)		<0.10					
	Cation Sum (meq/L)		<0.10					
	Cation - Anion Balance (%)		0.0					
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50			
		Total Organic Carbon (mg/L)	<0.50	<0.50				
	<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD			
Dissolved Metals Filtration Location			FIELD	FIELD				
Aluminum (Al)-Dissolved (mg/L)			<0.0010	<0.0010				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

19-DEC-19 13:53 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2394569-1	L2394569-2	L2394569-3	L2394569-4	L2394569-5
					WG	WG	WG	WG	WG
		09-DEC-19	12:00		09-DEC-19	09-DEC-19	09-DEC-19	09-DEC-19	09-DEC-19
					15:00	15:00	13:45	15:45	12:00
					GH_MW_MC-2S_WG_2019_12_09_NP	GH_MW_MC1-A_WG_2019_12_09_NP	GH_MW_MC1-B_WG_2019_12_09_NP	GH_MW_MC1-C_WG_2019_12_09_NP	GH_MW_MC10-A_WG_2019_12_09_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00035	0.00028	<0.00010	0.00011			
	Arsenic (As)-Dissolved (mg/L)	0.00018	0.00127	0.00162	<0.00010	0.00016			
	Barium (Ba)-Dissolved (mg/L)	0.128	0.0807	0.0811	0.0533	0.127			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.030	0.041	0.016	<0.010	0.029			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000586	<0.0000050	<0.0000050	0.0000082	0.0000616			
	Calcium (Ca)-Dissolved (mg/L)	90.3	40.7	44.3	46.2	90.0			
	Chromium (Cr)-Dissolved (mg/L)	0.00024	<0.00010	<0.00010	0.00022	0.00023			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00015	0.00011	<0.00010	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00044	<0.00020	<0.00020	<0.00020	0.00044			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.106	0.154	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0255	0.0093	0.0063	0.0024	0.0265			
	Magnesium (Mg)-Dissolved (mg/L)	28.7	15.4	14.0	12.3	29.2			
	Manganese (Mn)-Dissolved (mg/L)	0.00374	0.110	0.0360	<0.00010	0.00386			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00106	0.00335	0.00238	0.00105	0.00104			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.33	1.06	0.71	0.46	1.34			
	Selenium (Se)-Dissolved (mg/L)	0.00209	0.000108	0.000287	0.00112	0.00190			
	Silicon (Si)-Dissolved (mg/L)	4.16	4.84	4.97	1.87	4.20			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	20.2	12.9	3.57	0.731	19.9			
	Strontium (Sr)-Dissolved (mg/L)	0.302	0.743	0.281	0.195	0.302			
	Sulfur (S)-Dissolved (mg/L)	32.0	13.0	7.98	8.36	31.8			
	Thallium (Tl)-Dissolved (mg/L)	0.000013	<0.000010	<0.000010	<0.000010	0.000013			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	<0.00010	0.00014			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			
	Uranium (U)-Dissolved (mg/L)	0.00125	0.000221	0.000124	0.000882	0.00129			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0018	<0.0010	<0.0010	<0.0010	0.0022			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2394569-6	L2394569-7	L2394569-8
		Description	WG	WG	WG
		Sampled Date	09-DEC-19	09-DEC-19	09-DEC-19
		Sampled Time	12:30	16:00	12:35
		Client ID	GH_MW_MC10- B_WG_2019_12_0 9_NP	GH_MW_MC10- C_WG_2019_12_0 9_NP	GH_MW_MC10- D_WG_2019_12_0 9_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)			<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)			<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)			<0.00010	<0.00010
	Beryllium (Be)-Dissolved (mg/L)			<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)			<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)			<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)			<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)			<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)			<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)			<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)			0.00126 <sup>RRV</sup>	<0.00020
	Iron (Fe)-Dissolved (mg/L)			<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)			<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)			<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)			<0.0050	<0.0050
	Manganese (Mn)-Dissolved (mg/L)			<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)			<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)			<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)			<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)			<0.10	<0.10
	Selenium (Se)-Dissolved (mg/L)			<0.000050	<0.000050
	Silicon (Si)-Dissolved (mg/L)			<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)			<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)			<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)			<0.00020	<0.00020
	Sulfur (S)-Dissolved (mg/L)			<0.50	<0.50
	Thallium (Tl)-Dissolved (mg/L)			<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)			<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)			<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)			<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)			<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)			<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)			<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2394569-1, -2, -3, -4, -5, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2394569-1, -2, -3, -4, -5, -7, -8
Matrix Spike	Phosphorus (P)-Total	MS-B	L2394569-1, -2, -3, -4, -5, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
RRVAP	Reported Result Verified by Alternate Process

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CO3-CL</b>	Water	Carbonate (CO <sub>3</sub> )	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

---

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 1 of 9

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942127</b>							
<b>WG3241005-6</b>	<b>DUP</b>	<b>L2394569-3</b>						
Acidity (as CaCO3)		3.9	5.5	J	mg/L	1.6	2	11-DEC-19
<b>WG3241005-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.7		%		85-115	11-DEC-19
<b>WG3241005-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	11-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.9		%		85-115	13-DEC-19
<b>WG3242622-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-2</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			109.2		%		80-120	16-DEC-19
<b>WG3243695-1</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-1</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942131</b>							
<b>WG3241225-3</b>	<b>DUP</b>	<b>L2394569-6</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2</b>	<b>LCS</b>							
Bromide (Br)			104.9		%		85-115	11-DEC-19
<b>WG3241225-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-19
<b>WG3241225-4</b>	<b>MS</b>	<b>L2394569-6</b>						
Bromide (Br)			102.2		%		75-125	11-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4943673								
<b>WG3243095-2</b>	<b>LCS</b>								
Dissolved Organic Carbon			105.7		%		80-120	14-DEC-19	
<b>WG3243095-1</b>	<b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-DEC-19	
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4943673								
<b>WG3243095-2</b>	<b>LCS</b>								
Total Organic Carbon			96.0		%		80-120	14-DEC-19	
<b>WG3243095-1</b>	<b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	14-DEC-19	
<b>CL-IC-N-CL</b> <b>Water</b>									
Batch	R4942131								
<b>WG3241225-3</b>	<b>DUP</b>	<b>L2394569-6</b>							
Chloride (Cl)			<0.50	<0.50	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2</b>	<b>LCS</b>								
Chloride (Cl)			101.4		%		90-110	11-DEC-19	
<b>WG3241225-1</b>	<b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	11-DEC-19	
<b>WG3241225-4</b>	<b>MS</b>	<b>L2394569-6</b>							
Chloride (Cl)			100.5		%		75-125	11-DEC-19	
<b>CO3-CL</b> <b>Water</b>									
Batch	R4943301								
<b>WG3242622-1</b>	<b>MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	13-DEC-19	
<b>EC-L-PCT-CL</b> <b>Water</b>									
Batch	R4943301								
<b>WG3242622-2</b>	<b>LCS</b>								
Conductivity (@ 25C)			101.9		%		90-110	13-DEC-19	
<b>WG3242622-1</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19	
<b>F-IC-N-CL</b> <b>Water</b>									
Batch	R4942131								
<b>WG3241225-3</b>	<b>DUP</b>	<b>L2394569-6</b>							
Fluoride (F)			<0.020	<0.020	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2</b>	<b>LCS</b>								
Fluoride (F)			105.4		%		90-110	11-DEC-19	



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4942131</b>								
<b>WG3241225-1 MB</b>								
Fluoride (F)								
			<0.020		mg/L		0.02	11-DEC-19
<b>HG-D-CVAA-CL</b>								
<b>Water</b>								
<b>Batch R4944583</b>								
<b>WG3244228-2 LCS</b>								
Mercury (Hg)-Dissolved								
			110.0		%		80-120	16-DEC-19
<b>WG3244228-1 MB</b>								
Mercury (Hg)-Dissolved								
			<0.000005C		mg/L		0.000005	16-DEC-19
<b>MET-D-CCMS-CL</b>								
<b>Water</b>								
<b>Batch R4944086</b>								
<b>WG3243695-2 LCS</b>								
<b>TMRM</b>								
Aluminum (Al)-Dissolved								
			101.4		%		80-120	16-DEC-19
Antimony (Sb)-Dissolved								
			105.8		%		80-120	16-DEC-19
Arsenic (As)-Dissolved								
			97.9		%		80-120	16-DEC-19
Barium (Ba)-Dissolved								
			97.7		%		80-120	16-DEC-19
Bismuth (Bi)-Dissolved								
			103.6		%		80-120	16-DEC-19
Boron (B)-Dissolved								
			102.3		%		80-120	16-DEC-19
Cadmium (Cd)-Dissolved								
			97.1		%		80-120	16-DEC-19
Calcium (Ca)-Dissolved								
			107.4		%		80-120	16-DEC-19
Chromium (Cr)-Dissolved								
			98.3		%		80-120	16-DEC-19
Cobalt (Co)-Dissolved								
			97.3		%		80-120	16-DEC-19
Copper (Cu)-Dissolved								
			96.8		%		80-120	16-DEC-19
Iron (Fe)-Dissolved								
			102.9		%		80-120	16-DEC-19
Lead (Pb)-Dissolved								
			108.4		%		80-120	16-DEC-19
Lithium (Li)-Dissolved								
			109.1		%		80-120	16-DEC-19
Magnesium (Mg)-Dissolved								
			107.2		%		80-120	16-DEC-19
Manganese (Mn)-Dissolved								
			98.3		%		80-120	16-DEC-19
Molybdenum (Mo)-Dissolved								
			108.7		%		80-120	16-DEC-19
Nickel (Ni)-Dissolved								
			97.6		%		80-120	16-DEC-19
Phosphorus (P)-Dissolved								
			107.7		%		70-130	16-DEC-19
Potassium (K)-Dissolved								
			98.9		%		80-120	16-DEC-19
Selenium (Se)-Dissolved								
			97.8		%		80-120	16-DEC-19
Silicon (Si)-Dissolved								
			101.0		%		60-140	16-DEC-19
Silver (Ag)-Dissolved								
			108.4		%		80-120	16-DEC-19
Sodium (Na)-Dissolved								
			100.2		%		80-120	16-DEC-19



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-2</b>	<b>LCS</b>	<b>TMRM</b>						
Strontium (Sr)-Dissolved			115.3		%		80-120	16-DEC-19
Sulfur (S)-Dissolved			98.0		%		80-120	16-DEC-19
Thallium (Tl)-Dissolved			105.9		%		80-120	16-DEC-19
Tin (Sn)-Dissolved			98.8		%		80-120	16-DEC-19
Titanium (Ti)-Dissolved			87.1		%		80-120	16-DEC-19
Uranium (U)-Dissolved			110.0		%		80-120	16-DEC-19
Vanadium (V)-Dissolved			101.1		%		80-120	16-DEC-19
Zinc (Zn)-Dissolved			96.2		%		80-120	16-DEC-19
Zirconium (Zr)-Dissolved			108.3		%		80-120	16-DEC-19
<b>WG3243695-1</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-19



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-1</b>	<b>MB</b>							
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943991</b>							
<b>WG3242302-22</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	13-DEC-19
<b>WG3242302-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-DEC-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942131</b>							
<b>WG3241225-3</b>	<b>DUP</b>	<b>L2394569-6</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2</b>	<b>LCS</b>							
Nitrite (as N)			104.0		%		90-110	11-DEC-19
<b>WG3241225-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-19
<b>WG3241225-4</b>	<b>MS</b>	<b>L2394569-6</b>						
Nitrite (as N)			104.9		%		75-125	11-DEC-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942131</b>							
<b>WG3241225-3</b>	<b>DUP</b>	<b>L2394569-6</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2</b>	<b>LCS</b>							
Nitrate (as N)			102.0		%		90-110	11-DEC-19
<b>WG3241225-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-19
<b>WG3241225-4</b>	<b>MS</b>	<b>L2394569-6</b>						
Nitrate (as N)			101.1		%		75-125	11-DEC-19
<b>OH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-1 MB</b>								
Hydroxide (OH)			<5.0		mg/L		5	13-DEC-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4944929							
<b>WG3243823-3 CRM</b>		<b>CL-ORP</b>						
ORP			228		mV		210-230	16-DEC-19
<b>WG3243823-4 DUP</b>		<b>L2394569-1</b>						
ORP		444	442	J	mV	2.6	15	16-DEC-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4943276							
<b>WG3242072-22 LCS</b>								
Phosphorus (P)-Total			95.3		%		80-120	13-DEC-19
<b>WG3242072-21 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4943301							
<b>WG3242622-2 LCS</b>								
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4942271							
<b>WG3240152-4 LCS</b>								
Orthophosphate-Dissolved (as P)			101.5		%		80-120	11-DEC-19
<b>WG3240152-3 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4942131							
<b>WG3241225-3 DUP</b>		<b>L2394569-6</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3241225-2 LCS</b>								
Sulfate (SO4)			105.8		%		90-110	11-DEC-19
<b>WG3241225-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-19
<b>WG3241225-4 MS</b>		<b>L2394569-6</b>						
Sulfate (SO4)			104.2		%		75-125	11-DEC-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944736</b>							
<b>WG3243209-8</b>	<b>LCS</b>							
Total Dissolved Solids			104.8		%		85-115	16-DEC-19
<b>WG3243209-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	16-DEC-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944775</b>							
<b>WG3243370-7</b>	<b>DUP</b>	<b>L2394569-1</b>						
Total Kjeldahl Nitrogen		0.089	0.085		mg/L	4.6	20	13-DEC-19
<b>WG3243370-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.0		%		75-125	13-DEC-19
<b>WG3243370-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			107.0		%		75-125	13-DEC-19
<b>WG3243370-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	13-DEC-19
<b>WG3243370-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>WG3243370-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>WG3243370-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-DEC-19
<b>WG3243370-8</b>	<b>MS</b>	<b>L2394569-1</b>						
Total Kjeldahl Nitrogen			115.0		%		70-130	13-DEC-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944001</b>							
<b>WG3243208-4</b>	<b>LCS</b>							
Total Suspended Solids			95.9		%		85-115	16-DEC-19
<b>WG3243208-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	16-DEC-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4941441</b>							
<b>WG3240292-2</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	11-DEC-19
<b>WG3240292-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	11-DEC-19

# Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2394569

Report Date: 19-DEC-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	09-DEC-19 12:00	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
	2	09-DEC-19 15:00	16-DEC-19 10:00	0.25	163	hours	EHTR-FM
	3	09-DEC-19 13:45	16-DEC-19 10:00	0.25	164	hours	EHTR-FM
	4	09-DEC-19 15:45	16-DEC-19 10:00	0.25	162	hours	EHTR-FM
	5	09-DEC-19 12:00	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
	6	09-DEC-19 12:30	16-DEC-19 10:00	0.25	166	hours	EHTR-FM
	7	09-DEC-19 16:00	16-DEC-19 10:00	0.25	162	hours	EHTR-FM
pH							
	1	09-DEC-19 12:00	13-DEC-19 11:30	0.25	96	hours	EHTR-FM
	2	09-DEC-19 15:00	13-DEC-19 11:30	0.25	92	hours	EHTR-FM
	3	09-DEC-19 13:45	13-DEC-19 11:30	0.25	94	hours	EHTR-FM
	4	09-DEC-19 15:45	13-DEC-19 11:30	0.25	92	hours	EHTR-FM
	5	09-DEC-19 12:00	13-DEC-19 11:30	0.25	96	hours	EHTR-FM
	6	09-DEC-19 12:30	13-DEC-19 11:30	0.25	95	hours	EHTR-FM
	7	09-DEC-19 16:00	13-DEC-19 11:30	0.25	91	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2394569 were received on 10-DEC-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2394569-COFC

COC Number: 19 -

Page 1 of 3

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>												
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT If received by 3pm - business days - no surcharges apply												
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO			Priority (Business Days) 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/>					Emergency 1 Business day [E1 - 100%] <input type="checkbox"/> Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/> (Laboratory opening fees may apply)							
Phone: Tel.:604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			Date and Time Required for all E&P TATs:												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			For tests that can not be performed according to the service level selected, you will be contacted.												
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'			<b>Analysis Request</b>												
City/Province: Nelson, BC		'Genevieve.Pomerleau', Vicky.Lipinski@snclavalln.com			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below												
Postal Code: V1L 4C6		Teck - 'Jenni.Kropp', Crystal.Sabel@teck.com			F/I/P P F/I/P												
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/I/P P F/I/P												
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Emails: Katrina.Cheung@snclavalln.com			DOC (C-DIS-ORG-LOW-CL)												
Company:		payables@snclavalln.com			TOC (C-TOT-ORG-LOW-CL)												
Contact:		Project Information			BCM DGG D-Met +Hg (MET-D-BCMDG-CL)												
ALS Account # / Quote #: MOR125 / Q72340		Oil and Gas Required Fields (client use)			Total N Calc. (N-T-CALC-CL)												
Job #: 658004		AFE/Cost Center: PO#			Nitrate + Nitrite Calc. (N2N3-CALC-CL)												
PO / AFE: 658004		Major/Minor Code: Routing Code:			Teck Routine (TECKCOAL-ROUTINE-CL)												
LSD:		Requisitioner:			TKN (TKN-L-F-CL)												
ALS Lab Work Order # (lab use only):		Location:			Bicarbonate (BIC-CL)												
ALS Contact: Ryan Smyth 403-407-1795		ALS Contact: Ryan Smyth 403-407-1795			Carbonate (CO3-CL)												
Sampler: AH/METIC/lhb		ALS Contact: Ryan Smyth 403-407-1795			Hydroxide (OH-CL)												
ALS Sample # (lab use only)		Sample Identification &/or Coordinates		Teck Sample Location (sys_loc_code)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type		SAMPLES ON HOLD		Sample is hazardous (please provide further details)		NUMBER OF CONTAINERS	
GH_MW-MC-1S_WG_2019__NP		GH_MW-MC-1S		GH_MW-MC-1S						Water							
GH_MW-MC-1D_WG_2019__NP		GH_MW-MC-1D		GH_MW-MC-1D						Water							
GH_MW-MC-2S_WG_2019_12-09-NP		GH_MW-MC-2S		GH_MW-MC-2S		09-DEC-19		12:00		Water						5	
GH_MW-MC-2D_WG_2019_12-09-NP		GH_MW-MC-2D		GH_MW-MC-2D		09-DEC-19				Water							
GH_MW-Willow-1S_WG_2019__NP		GH_MW-Willow-1S		GH_MW-Willow-1S						Water							
GH_MW-Willow-1D_WG_2019__NP		GH_MW-Willow-1D		GH_MW-Willow-1D						Water							
GH_MW-Willow-2S_WG_2019__NP		GH_MW-Willow-2S		GH_MW-Willow-2S						Water							
GH_MW-Willow-2D_WG_2019__NP		GH_MW-Willow-2D		GH_MW-Willow-2D						Water							
GH_MW-Willow-3S_WG_2019__NP		GH_MW-Willow-3S		GH_MW-Willow-3S						Water							
GH_MW-Willow-3D_WG_2019__NP		GH_MW-Willow-3D		GH_MW-Willow-3D						Water							
GH_MW-Wolf-1S_WG_2019__NP		GH_MW-Wolf-1S		GH_MW-Wolf-1S						Water							
GH_MW-Wolf-1D_WG_2019__NP		GH_MW-Wolf-1D		GH_MW-Wolf-1D						Water							
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>															
Are samples taken from a Regulated DW System? <input type="checkbox"/>		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>															
Are samples for human consumption/ use? <input type="checkbox"/>		Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>															
Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		Cooling Initiated <input checked="" type="checkbox"/>															
PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		INITIAL COOLER TEMPERATURES °C															
Teck Facility Name: (please select the applicable Facility)		FINAL COOLER TEMPERATURES °C															
GHO-GREYHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS																	
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: [Signature]		Date: Dec 9, 2019		Received by: [Signature]		Date: 12/10/19		Received by: [Signature]		Date: [Signature]		Time: [Signature]					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEP1 2017 FROM1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2394569-COFC

COC Number: 19 -

Page 2 of 3

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> NO <input type="checkbox"/>		PRIORITY (Business Days)		4 day [P4-20%] <input type="checkbox"/>		EMERGENCY		1 Business day [E1 - 100%]		<input type="checkbox"/>									
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>		2 day [P2-50%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 - 200%]		<input type="checkbox"/>		(Laboratory opening fees may apply)									
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Date and Time Required for all E&P TATs:																	
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'		For tests that can not be performed according to the service level selected, you will be contacted.																	
City/Province: Nelson, BC		'Genevieve.Pomerleau', Vicky.Lipinski@snc-lavalin.com		<b>Analysis Request</b>																	
Postal Code: V1L 4C6		Teck - 'Jenni.Kropp', Crystal.Sabel@teck.com		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		F/P P F/P P																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		DOC (C-DIS-ORG-LOW-CL)																	
Company:		Emails: Katrina.Cheung@snc-lavalin.com		TOC (C-TOT-ORG-LOW-CL)																	
Contact:		payables@snc-lavalin.com		BCMDG D-Met.+Hg (MET-D-BCMDG-CL)																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>		Total N Calc. (N-T-CALC-CL)																	
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#		Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
Job #: 658004		Major/Minor Code: Routing Code:		Teck Routine (TECKCOAL-ROUTINE-CL)																	
PO / AFE: 658004		Requisitioner:		TKN (TKN-L-F-CL)																	
LSD:		Location:		Bicarbonate (BIC-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1795		Sampler: <i>WIMB/K/GG</i>		Carbonate (CO3-CL)															
ALS Sample # (lab use only)		Sample Identification &/or Coordinates (This description will appear on the report)		Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)		Date (dd-mmm-yy)		Time (hh:mm)		Sample Type		Hydroxide (OH-CL)									
		GH_MW-Woif-2S-WG-2019_NP		GH_MW-Woif-2S						Water		SAMPLES ON HOLD									
		GH_MW-Woif-2D-WG-2019_NP		GH_MW-Woif-2D						Water		Sample is hazardous (please provide further details)									
		GH_MW-FC1-WG-2019_NP		GH_MW-FC1						Water		NUMBER OF CONTAINERS									
		GH_MW-FC2-WG-2019_NP		GH_MW-FC2						Water											
		GH_MW-LC1-A-WG-2019_NP		GH_MW-LC1-A						Water											
		GH_MW-LC1-B-WG-2019_NP		GH_MW-LC1-B						Water											
		GH_MW-LC2-A-WG-2019_NP		GH_MW-LC2-A						Water											
		GH_MW-LC2-B-WG-2019_NP		GH_MW-LC2-B						Water											
<i>2/3/5</i>		GH_MW-WC1-A-WG-2019 <i>12/6/19</i> NP		GH_MW-WC1-A		<i>09-DEC-19</i>		<i>15:00</i>		Water											
		GH_MW-WC1-B-WG-2019 <i>12/6/19</i> NP		GH_MW-WC1-B		<i>09-DEC-19</i>		<i>13:45</i>		Water											
		GH_MW-WC1-C-WG-2019 <i>12/6/19</i> NP		GH_MW-WC1-C		<i>09-DEC-19</i>		<i>15:45</i>		Water											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																	
Are samples taken from a Regulated DW System? <input type="checkbox"/> <input checked="" type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																	
Are samples for human consumption/use? <input type="checkbox"/> <input checked="" type="checkbox"/>		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																	
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																	
				INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>		<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																	
Released by: <i>KW</i>		Date: <i>Dec 9, 2019</i>		Received by:		Date:		Time:		Received by:		Date:		Time:							

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

**Chain of Custody (COC) / Analytical Request Form**

Canada Toll Free: 1 800 668 9878



L2394569-COFC

Number: 19 -

Page 3 of 3

<b>Report To</b> Contact and company name below will appear on the final report Company: SNC-Lavalin -Nelson Contact: Katrina Cheung Phone: Tel.:604-515-5151 x 129 Cell.: 778-990-6576 Company address below will appear on the final report			<b>Report Format / Distribution</b> Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: SNC - 'Katrina.Cheung' 'Genevieve.Pomerleau', Vicky.Lipinski@snclavalin.com Teck - 'Jenni.Kropp', Crystal.Sabel@teck.com			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b> Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply PRIORITY (Business Days): 4 day [P4-20%] <input type="checkbox"/> 3 day [P3-25%] <input type="checkbox"/> 2 day [P2-50%] <input type="checkbox"/> EMERGENCY 1 Business day [E1 - 100%] Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/> (Laboratory opening fees may apply) Date and Time Required for all E&P TATs:																
Street: 520 Lake Street City/Province: Nelson, BC Postal Code: V1L 4C6						For tests that can not be performed according to the service level selected, you will be contacted.																
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO			<b>Invoice Distribution</b> Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Emails: Katrina.Cheung@snclavalin.com payables@snclavalin.com			<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Project Information ALS Account # / Quote #: MOR125 / Q72340 Job #: 658004 PO / AFE: 658004 LSD:			<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:			DOC (C-DIS-ORG-LOW-CL) F/P P F/P P TOC (C-TOT-ORG-LOW-CL) F/P P BICMDG D-Met.+Hg (MET-D-BCMDG-CL) F/P P Total N Calc. (N-T-CALC-CL) F/P P Nitrate + Nitrite Calc. (N2NO3-CALC-CL) F/P P Teck Routine (TECKCOAL-ROUTINE-CL) F/P P TKN (TKN-L-F-CL) F/P P Bicarbonate (BIC-CL) F/P P Carbonate (CO3-CL) F/P P Hydroxide (OH-CL) F/P P Teck Routine (TECKCOAL-ROUTINE-CL) F/P P *Remove CL-CATIONS-D-COMS (REP) + *Remove MET-D-COMS-CL + *Remove IONBALANCE-BC-CL + *Remove TECKCOAL-IONBAL-CL SAMPLES ON HOLD Sample is hazardous (please provide further details) NUMBER OF CONTAINERS																
ALS Lab Work Order # (lab use only):			ALS Contact: Ryan Smyth 403-407-1795 Sampler: AH/MB/KC/166																			
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	DOC	TOC	BICMDG	Total N	Nitrate	Teck Routine	TKN	Bicarbonate	Carbonate	Hydroxide	Teck Routine	*Remove CL-CATIONS-D-COMS (REP) +	*Remove MET-D-COMS-CL +	*Remove IONBALANCE-BC-CL +	*Remove TECKCOAL-IONBAL-CL	SAMPLES ON HOLD	NUMBER OF CONTAINERS
5	GH_MW_MC10-A_WG_20191209 NP	GH_MW_MC10-A	09-DEC-19	12:00	Water	R	R	R	R	R	R	R	R	R	R	R						5
<del>AP</del>	<del>GH_MW_MC10-A_WG_20191209 NP</del>	<del>GH_MW_MC10-A</del>			Water	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>						
	<del>GH_MW_MC10-A_WG_20191209 NP</del>	<del>GH_MW_MC10-A</del>			Water	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>						
16	GH_MW_MC10-B_WG_20191209 NP	GH_MW_MC10-B	09-DEC-19	12:30	Water		R		R	R		R	R	R	R	R	R	R	R	R		2
17	GH_MW_MC10-C_WG_20191209 NP	GH_MW_MC10-C	09-DEC-19	16:00	Water	R	R	R	R	R	R	R	R	R	R							15
18	GH_MW_MC10-D_WG_20191209 NP	GH_MW_MC10-D	09-DEC-19	12:35	Water	R		R														3
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: _____																	
Are samples for human consumption/ use? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES		Teck Facility Name: (please select the applicable Facility) GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS																				
SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (lab use only)					FINAL SHIPMENT RECEPTION (lab use only)												
Released by: <i>[Signature]</i>		Date: Dec 9, 2019		Time: 16:00		Received by:		Date:		Time:		Received by:		Date:		Time:						



SNC-Lavalin  
ATTN: Katrina Cheung  
Teck Resources Limited c/o SNC-Lavalin  
# 3 - 520 Lake Street  
Nelson BC V1L 4C6

Date Received: 11-DEC-19  
Report Date: 19-DEC-19 14:03 (MT)  
Version: FINAL

Client Phone: 250-354-1664

## Certificate of Analysis

Lab Work Order #: L2394989  
Project P.O. #: 658004  
Job Reference: 658004  
C of C Numbers:  
Legal Site Desc:

Inayat Dhaliwal  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2394989-1 WATER 10-DEC-19 13:00 GH_MW-MC- 1S_WG_2019_12_ 10_NP	L2394989-2 WATER 10-DEC-19 13:45 GH_MW-MC- 1D_WG_2019_12_ 10_NP	L2394989-3 WATER 10-DEC-19 11:30 GH_MW-MC- 2D_WG_2019_12_ 10_NP	L2394989-4 WATER 10-DEC-19 15:30 GH_MW-WILLOW- 3S_WG_2019_12_ 10_NP	L2394989-5 WATER 10-DEC-19 14:40 GH_MW-LC1- A_WG_2019_12_1 0_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	314	399	2050	447	369
	Hardness (as CaCO3) (mg/L)	152	127	23.9	241	166
	pH (pH)	8.22	8.32	9.10	8.27	8.23
	ORP (mV)	456	410	15.7	465	279
	Total Suspended Solids (mg/L)	<1.0	<1.0	704 <sup>DLHC</sup>	13.5 <sup>DLHC</sup>	5.2 <sup>DLHC</sup>
	Total Dissolved Solids (mg/L)	146 <sup>DLHC</sup>	176 <sup>DLHC</sup>	1880 <sup>DLHC</sup>	232 <sup>DLHC</sup>	179 <sup>DLHC</sup>
	Turbidity (NTU)	<0.10	0.44	3070	12.4	1.84
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	164	197	631	259	179
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	5.6	123	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	164	203	754 <sup>DLHC</sup>	259	179
	Ammonia as N (mg/L)	0.0072	0.0327	0.645 <sup>DLHC</sup>	<0.0050	0.0155
	Bicarbonate (HCO3) (mg/L)	201	241	770	316	218
	Bromide (Br) (mg/L)	<0.050	0.073	0.761	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	73.8	<5.0	<5.0
	Chloride (Cl) (mg/L)	<0.50	17.0	240	<0.50	2.50
	Fluoride (F) (mg/L)	0.137	0.765	1.95	0.131	0.430
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	82.3 <sup>BL:INT</sup>	93.6	91.7	91.0	90.6
	Nitrate and Nitrite (as N) (mg/L)	0.0995	<0.0051	<0.0051	0.0612	0.0475
	Nitrate (as N) (mg/L)	0.0995	<0.0050	<0.0050	0.0612	0.0439
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0036
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	2.86 <sup>DLM</sup>	<0.050	<0.050
	Total Nitrogen (mg/L)	0.100	<0.050	2.86 <sup>DLHC</sup>	0.061	<0.050 <sup>HTD</sup>
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	0.0013	0.329 <sup>DLHC</sup>	0.0082	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	2.05 <sup>DLHC</sup>	0.0176	<0.0020
	Sulfate (SO4) (mg/L)	21.2	0.47	10.4	14.2	33.1
	Anion Sum (meq/L)	3.74	4.59	22.1	5.48	4.35
	Cation Sum (meq/L)	3.08	4.29	20.3	4.98	3.94
	Cation - Anion Balance (%)	-9.7	-3.3	-4.3	-4.7	-4.9
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	2.13	1.52	1.20
	Total Organic Carbon (mg/L)	<0.50	<0.50	36 <sup>DLM</sup>	1.72	1.48
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0010	0.0013	0.0158 <sup>DLDS</sup>	0.0024	0.0037

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2394989-6 WATER 10-DEC-19 13:45 GH_MW_LC1- B_WG_2019_12_1 0_NP	L2394989-7 WATER 10-DEC-19 12:10 GH_MW_LC2- A_WG_2019_12_1 0_NP	L2394989-8 WATER 10-DEC-19 12:40 GH_MW_LC2- B_WG_2019_12_1 0_NP	L2394989-9 WATER 10-DEC-19 14:00 GH_MW_MC10- A_WG_2019_12_1 0_NP	
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	328	317	319	326
	Hardness (as CaCO3) (mg/L)	172	165	170	175
	pH (pH)	8.23	8.25	8.23	8.26
	ORP (mV)	493	497	214	372
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	155 <sup>DLHC</sup>	146 <sup>DLHC</sup>	155 <sup>DLHC</sup>	165 <sup>DLHC</sup>
	Turbidity (NTU)	0.16	0.14	0.14	0.18
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	163	162	157	165
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	163	162	157	165
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	0.0262
	Bicarbonate (HCO3) (mg/L)	198	197	191	202
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050
	Carbonate (CO3) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	0.57	0.68	<0.50	0.52
	Fluoride (F) (mg/L)	0.142	0.172	0.161	0.141
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	93.0	91.8	95.2	93.2
	Nitrate and Nitrite (as N) (mg/L)	0.103	0.0899	0.121	0.111
	Nitrate (as N) (mg/L)	0.103	0.0899	0.121	0.111
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050
	Total Nitrogen (mg/L)	0.103	0.090	0.121	0.111
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022	0.0016	0.0019	0.0019
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	22.4	21.1	22.3	22.5
	Anion Sum (meq/L)	3.74	3.71	3.62	3.80
	Cation Sum (meq/L)	3.48	3.40	3.44	3.54
	Cation - Anion Balance (%)	-3.6	-4.3	-2.4	-3.5
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.56	<0.50
	Total Organic Carbon (mg/L)	0.58	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0015	0.0018	0.0014	0.0035

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

19-DEC-19 14:03 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2394989-1	L2394989-2	L2394989-3	L2394989-4	L2394989-5
					WATER	WATER	WATER	WATER	WATER
					10-DEC-19	10-DEC-19	10-DEC-19	10-DEC-19	10-DEC-19
					13:00	13:45	11:30	15:30	14:40
					GH_MW-MC-1S_WG_2019_12_10_NP	GH_MW-MC-1D_WG_2019_12_10_NP	GH_MW-MC-2D_WG_2019_12_10_NP	GH_MW-WILLOW-3S_WG_2019_12_10_NP	GH_MW-LC1-A_WG_2019_12_10_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00080	0.00580 <sup>DLDS</sup>	<0.00010	0.00080	0.00580 <sup>DLDS</sup>	0.00014	0.00051
	Barium (Ba)-Dissolved (mg/L)	0.0478	0.778	0.0981 <sup>DLDS</sup>	0.0478	0.778	0.0981 <sup>DLDS</sup>	0.206	0.0729
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020	<0.00010 <sup>DLDS</sup>	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.081	0.750 <sup>DLDS</sup>	<0.010	0.081	0.750 <sup>DLDS</sup>	0.010	0.024
	Cadmium (Cd)-Dissolved (mg/L)	0.0000052	<0.0000050	<0.000025 <sup>DLDS</sup>	0.0000052	<0.0000050	<0.000025 <sup>DLDS</sup>	0.0000189	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)	41.8	27.4	4.38 <sup>DLDS</sup>	41.8	27.4	4.38 <sup>DLDS</sup>	60.6	41.2
	Chromium (Cr)-Dissolved (mg/L)	0.00025	<0.00010	<0.00050 <sup>DLDS</sup>	0.00025	<0.00010	<0.00050 <sup>DLDS</sup>	0.00011	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	0.00026
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.0010 <sup>DLDS</sup>	<0.00020	<0.00020	<0.0010 <sup>DLDS</sup>	0.00037	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.102	<0.050 <sup>DLDS</sup>	<0.010	0.102	<0.050 <sup>DLDS</sup>	<0.010	0.041
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050	<0.00025 <sup>DLDS</sup>	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0017	0.0798	1.04 <sup>DLDS</sup>	0.0017	0.0798	1.04 <sup>DLDS</sup>	0.0070	0.0087
	Magnesium (Mg)-Dissolved (mg/L)	11.6	14.3	3.14 <sup>DLDS</sup>	11.6	14.3	3.14 <sup>DLDS</sup>	21.7	15.3
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.135	0.0265 <sup>DLDS</sup>	<0.00010	0.135	0.0265 <sup>DLDS</sup>	0.00193	0.261
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050	<0.0000050	<0.0000050 <sup>DLDS</sup>	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000980	0.00646	0.00136 <sup>DLDS</sup>	0.000980	0.00646	0.00136 <sup>DLDS</sup>	0.000609	0.00415
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.32 <sup>DLDS</sup>	<0.050	<0.050	0.32 <sup>DLDS</sup>	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.35	1.28	2.19 <sup>DLDS</sup>	0.35	1.28	2.19 <sup>DLDS</sup>	0.89	1.06
	Selenium (Se)-Dissolved (mg/L)	0.000993	<0.000050	0.0210 <sup>DLDS</sup>	0.000993	<0.000050	0.0210 <sup>DLDS</sup>	0.000892	0.000174
	Silicon (Si)-Dissolved (mg/L)	1.73	3.44	3.47 <sup>DLDS</sup>	1.73	3.44	3.47 <sup>DLDS</sup>	4.16	4.13
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	0.749	39.3	453 <sup>DLDS</sup>	0.749	39.3	453 <sup>DLDS</sup>	3.46	13.6
	Strontium (Sr)-Dissolved (mg/L)	0.189	0.420	0.168 <sup>DLDS</sup>	0.189	0.420	0.168 <sup>DLDS</sup>	0.138	0.388
	Sulfur (S)-Dissolved (mg/L)	8.29	<0.50	66.1 <sup>DLDS</sup>	8.29	<0.50	66.1 <sup>DLDS</sup>	5.43	12.4
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000030	<0.000050 <sup>DLDS</sup>	<0.000010	0.000030	<0.000050 <sup>DLDS</sup>	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010	<0.00050 <sup>DLDS</sup>	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030	<0.0015 <sup>DLDS</sup>	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000752	0.000069	0.000878 <sup>DLDS</sup>	0.000752	0.000069	0.000878 <sup>DLDS</sup>	0.000399	0.00101
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050	<0.0025 <sup>DLDS</sup>	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	<0.0010	<0.0010	<0.0050 <sup>DLDS</sup>	0.0281	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.0010 <sup>DLDS</sup>	<0.00030	<0.00030	<0.0010 <sup>DLDS</sup>	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2394989-6	L2394989-7	L2394989-8	L2394989-9
		Description	WATER	WATER	WATER	WATER
		Sampled Date	10-DEC-19	10-DEC-19	10-DEC-19	10-DEC-19
		Sampled Time	13:45	12:10	12:40	14:00
		Client ID	GH_MW_LC1- B_WG_2019_12_1 0_NP	GH_MW_LC2- A_WG_2019_12_1 0_NP	GH_MW_LC2- B_WG_2019_12_1 0_NP	GH_MW_MC10- A_WG_2019_12_1 0_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Antimony (Sb)-Dissolved (mg/L)		0.00011	0.00012	0.00017	0.00011
	Arsenic (As)-Dissolved (mg/L)		<0.00010	0.00011	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0530	0.0728	0.0523	0.0522
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000083	0.0000065	0.0000089	0.0000063
	Calcium (Ca)-Dissolved (mg/L)		48.3	44.5	47.5	49.8
	Chromium (Cr)-Dissolved (mg/L)		0.00028	0.00024	0.00029	0.00028
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0022	0.0052	0.0031	0.0023
	Magnesium (Mg)-Dissolved (mg/L)		12.5	13.1	12.5	12.3
	Manganese (Mn)-Dissolved (mg/L)		0.00012	0.00048	0.00026	0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00117	0.00160	0.00138	0.00115
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		0.43	0.59	0.52	0.43
	Selenium (Se)-Dissolved (mg/L)		0.00147	0.00118	0.00127	0.00124
	Silicon (Si)-Dissolved (mg/L)		1.91	2.08	1.76	1.69
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		0.767	1.97	0.730	0.763
	Strontium (Sr)-Dissolved (mg/L)		0.201	0.176	0.172	0.194
	Sulfur (S)-Dissolved (mg/L)		9.81	7.63	8.30	8.48
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00033
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000889	0.000979	0.000890	0.000897
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO <sub>3</sub> )	MB-LOR	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2394989-1, -2, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-CL</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

<b>CO3-CL</b>	Water	Carbonate (CO3)	APHA 2320 B-Potentiometric Titration
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
------------------	-------	-------------------------	-----------------

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

<b>HARDNESS-CALC-CL</b>	Water	Hardness	APHA 2340 B
-------------------------	-------	----------	-------------

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

<b>HG-D-CVAA-CL</b>	Water	Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E (mod)
---------------------	-------	-------------------------------------	----------------------------

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
-------------------------	-------	-------------------------	------------

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) =  $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
----------------------	-------	--	------------------------

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
--------------------	-------	------------------------------	------------------------

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

<b>N2N3-CALC-CL</b>	Water	Nitrate+Nitrite	CALCULATION
---------------------	-------	-----------------	-------------

<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
-------------------	-------	-----------------------	---

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
----------------------	-------	------------------------------------	-----------------

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
----------------------	-------	------------------------------------	-----------------

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

<b>OH-CL</b>	Water	Hydroxide in Water	APHA 2320 B-Potentiometric Titration
--------------	-------	--------------------	--------------------------------------

<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
---------------	-------	---	------------

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
---------------------	-------	----------------------	------------------------

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
--------------	-------	----	-----------------------

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
------------------------	-------	---------------------------------	------------------------

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 1 of 11

Client: SNC-Lavalin  
 Teck Resources Limited c/o SNC-Lavalin # 3 - 520 Lake Street  
 Nelson BC V1L 4C6

Contact: Katrina Cheung

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4942964</b>							
<b>WG3242015-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.8		%		85-115	12-DEC-19
<b>WG3242015-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	12-DEC-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.4		%		85-115	13-DEC-19
<b>WG3242622-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			106.3		%		85-115	13-DEC-19
<b>WG3242622-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.4	MB-LOR	mg/L		1	13-DEC-19
<b>WG3242622-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.0		mg/L		1	13-DEC-19
<b>BE-D-L-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Beryllium (Be)-Dissolved			99.9		%		80-120	16-DEC-19
<b>WG3243695-5</b>	<b>MB</b>							
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	16-DEC-19
<b>BIC-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4943301</b>							
<b>WG3242622-4</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-DEC-19
<b>WG3242622-7</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	13-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-11</b>	<b>DUP</b>	<b>L2394989-9</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3245305-10</b>	<b>LCS</b>							
Bromide (Br)			99.9		%		85-115	11-DEC-19
<b>WG3245305-6</b>	<b>LCS</b>							
Bromide (Br)			99.0		%		85-115	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-19
<b>WG3245305-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-DEC-19
<b>WG3245305-12</b>	<b>MS</b>	<b>L2394989-9</b>						
Bromide (Br)			97.1		%		75-125	11-DEC-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945261</b>							
<b>WG3244196-7</b>	<b>DUP</b>	<b>L2394989-9</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	16-DEC-19
<b>WG3244196-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.4		%		80-120	16-DEC-19
<b>WG3244196-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.4		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>WG3244196-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>WG3244196-8</b>	<b>MS</b>	<b>L2394989-9</b>						
Dissolved Organic Carbon			97.8		%		70-130	16-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945261</b>							
<b>WG3244196-7</b>	<b>DUP</b>	<b>L2394989-9</b>						
Total Organic Carbon		<0.50	0.51	RPD-NA	mg/L	N/A	20	16-DEC-19
<b>WG3244196-2</b>	<b>LCS</b>							
Total Organic Carbon			106.0		%		80-120	16-DEC-19
<b>WG3244196-6</b>	<b>LCS</b>							
Total Organic Carbon			99.5		%		80-120	16-DEC-19
<b>WG3244196-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>WG3244196-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-DEC-19
<b>WG3244196-8</b>	<b>MS</b>	<b>L2394989-9</b>						
Total Organic Carbon			98.3		%		70-130	16-DEC-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-11</b>	<b>DUP</b>	<b>L2394989-9</b>						
Chloride (Cl)		0.52	0.58		mg/L	11	20	11-DEC-19
<b>WG3245305-10</b>	<b>LCS</b>							
Chloride (Cl)			99.3		%		90-110	11-DEC-19



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4945395</b>								
<b>WG3245305-6</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-DEC-19
<b>WG3245305-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-DEC-19
<b>WG3245305-12</b>	<b>MS</b>	<b>L2394989-9</b>						
Chloride (Cl)			97.1		%		75-125	11-DEC-19
<b>CO3-CL</b>								
<b>Batch R4943301</b>								
<b>WG3242622-4</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	13-DEC-19
<b>WG3242622-7</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	13-DEC-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4943301</b>								
<b>WG3242622-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	13-DEC-19
<b>WG3242622-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.2		%		90-110	13-DEC-19
<b>WG3242622-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>WG3242622-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-DEC-19
<b>F-IC-N-CL</b>								
<b>Batch R4945395</b>								
<b>WG3245305-11</b>	<b>DUP</b>	<b>L2394989-9</b>						
Fluoride (F)		0.141	0.146		mg/L	3.5	20	11-DEC-19
<b>WG3245305-10</b>	<b>LCS</b>							
Fluoride (F)			100.6		%		90-110	11-DEC-19
<b>WG3245305-6</b>	<b>LCS</b>							
Fluoride (F)			100.5		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-DEC-19
<b>WG3245305-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-DEC-19
<b>WG3245305-12</b>	<b>MS</b>	<b>L2394989-9</b>						
Fluoride (F)			98.6		%		75-125	11-DEC-19



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944583</b>							
<b>WG3244228-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			114.0		%		80-120	16-DEC-19
<b>WG3244228-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-DEC-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Aluminum (Al)-Dissolved			104.5		%		80-120	16-DEC-19
Antimony (Sb)-Dissolved			99.1		%		80-120	16-DEC-19
Arsenic (As)-Dissolved			103.6		%		80-120	16-DEC-19
Barium (Ba)-Dissolved			101.6		%		80-120	16-DEC-19
Bismuth (Bi)-Dissolved			97.9		%		80-120	16-DEC-19
Boron (B)-Dissolved			93.4		%		80-120	16-DEC-19
Cadmium (Cd)-Dissolved			103.0		%		80-120	16-DEC-19
Calcium (Ca)-Dissolved			100.8		%		80-120	16-DEC-19
Chromium (Cr)-Dissolved			102.2		%		80-120	16-DEC-19
Cobalt (Co)-Dissolved			102.4		%		80-120	16-DEC-19
Copper (Cu)-Dissolved			102.4		%		80-120	16-DEC-19
Iron (Fe)-Dissolved			103.3		%		80-120	16-DEC-19
Lead (Pb)-Dissolved			99.9		%		80-120	16-DEC-19
Lithium (Li)-Dissolved			96.3		%		80-120	16-DEC-19
Magnesium (Mg)-Dissolved			107.2		%		80-120	16-DEC-19
Manganese (Mn)-Dissolved			104.3		%		80-120	16-DEC-19
Molybdenum (Mo)-Dissolved			104.3		%		80-120	16-DEC-19
Nickel (Ni)-Dissolved			106.1		%		80-120	16-DEC-19
Phosphorus (P)-Dissolved			108.9		%		70-130	16-DEC-19
Potassium (K)-Dissolved			102.1		%		80-120	16-DEC-19
Selenium (Se)-Dissolved			99.4		%		80-120	16-DEC-19
Silicon (Si)-Dissolved			104.7		%		60-140	16-DEC-19
Silver (Ag)-Dissolved			103.6		%		80-120	16-DEC-19
Sodium (Na)-Dissolved			102.7		%		80-120	16-DEC-19
Strontium (Sr)-Dissolved			106.3		%		80-120	16-DEC-19
Sulfur (S)-Dissolved			103.5		%		80-120	16-DEC-19
Thallium (Tl)-Dissolved			98.7		%		80-120	16-DEC-19
Tin (Sn)-Dissolved			102.5		%		80-120	16-DEC-19



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-6</b>	<b>LCS</b>	<b>TMRM</b>						
Titanium (Ti)-Dissolved			99.5		%		80-120	16-DEC-19
Uranium (U)-Dissolved			101.3		%		80-120	16-DEC-19
Vanadium (V)-Dissolved			104.1		%		80-120	16-DEC-19
Zinc (Zn)-Dissolved			100.1		%		80-120	16-DEC-19
Zirconium (Zr)-Dissolved			104.5		%		80-120	16-DEC-19
<b>WG3243695-5</b>	<b>MB</b>							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	16-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-DEC-19





## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4944086</b>							
<b>WG3243695-5</b>	<b>MB</b>							
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-DEC-19
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	16-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945532</b>							
<b>WG3244711-19</b>	<b>DUP</b>	<b>L2394989-9</b>						
Ammonia as N		0.0262	0.0279		mg/L	6.3	20	18-DEC-19
<b>WG3244711-18</b>	<b>LCS</b>							
Ammonia as N			100.2		%		85-115	17-DEC-19
<b>WG3244711-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-DEC-19
<b>WG3244711-20</b>	<b>MS</b>	<b>L2394989-9</b>						
Ammonia as N			112.5		%		75-125	18-DEC-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-11</b>	<b>DUP</b>	<b>L2394989-9</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-DEC-19
<b>WG3245305-10</b>	<b>LCS</b>							
Nitrite (as N)			101.7		%		90-110	11-DEC-19
<b>WG3245305-6</b>	<b>LCS</b>							
Nitrite (as N)			102.0		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-19
<b>WG3245305-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	11-DEC-19
<b>WG3245305-12</b>	<b>MS</b>	<b>L2394989-9</b>						
Nitrite (as N)			101.8		%		75-125	11-DEC-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4945395</b>							
<b>WG3245305-11</b>	<b>DUP</b>	<b>L2394989-9</b>						
Nitrate (as N)		0.111	0.111		mg/L	0.1	20	11-DEC-19
<b>WG3245305-10</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	11-DEC-19
<b>WG3245305-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4945395</b>								
<b>WG3245305-6</b>	<b>LCS</b>							
Nitrate (as N)			101.1		%		90-110	11-DEC-19
<b>WG3245305-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-19
<b>WG3245305-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	11-DEC-19
<b>WG3245305-12</b>	<b>MS</b>	<b>L2394989-9</b>						
Nitrate (as N)			98.5		%		75-125	11-DEC-19
<b>OH-CL</b>								
<b>Batch R4943301</b>								
<b>WG3242622-4</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	13-DEC-19
<b>WG3242622-7</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	13-DEC-19
<b>ORP-CL</b>								
<b>Batch R4944929</b>								
<b>WG3243823-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	16-DEC-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4943778</b>								
<b>WG3242931-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.5		%		80-120	15-DEC-19
<b>WG3242931-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-DEC-19
<b>PH-CL</b>								
<b>Batch R4943301</b>								
<b>WG3242622-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	13-DEC-19
<b>WG3242622-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	13-DEC-19
<b>PO4-DO-L-COL-CL</b>								
<b>Batch R4942271</b>								
<b>WG3240152-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			108.3		%		80-120	11-DEC-19
<b>WG3240152-12</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.3		%		80-120	11-DEC-19



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch      R4942271								
<b>WG3240152-11 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
<b>WG3240152-9 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-DEC-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch      R4945395								
<b>WG3245305-11 DUP</b>								
Sulfate (SO4)		<b>L2394989-9</b> 22.5	22.8		mg/L	1.2	20	11-DEC-19
<b>WG3245305-10 LCS</b>								
Sulfate (SO4)			99.8		%		90-110	11-DEC-19
<b>WG3245305-6 LCS</b>								
Sulfate (SO4)			102.5		%		90-110	11-DEC-19
<b>WG3245305-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-19
<b>WG3245305-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-DEC-19
<b>WG3245305-12 MS</b>								
Sulfate (SO4)		<b>L2394989-9</b>	96.3		%		75-125	11-DEC-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch      R4945535								
<b>WG3244216-8 LCS</b>								
Total Dissolved Solids			94.6		%		85-115	17-DEC-19
<b>WG3244216-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	17-DEC-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch      R4944841								
<b>WG3244543-10 LCS</b>								
Total Kjeldahl Nitrogen			99.5		%		75-125	17-DEC-19
<b>WG3244543-14 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	17-DEC-19
<b>WG3244543-2 LCS</b>								
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
<b>WG3244543-6 LCS</b>								
Total Kjeldahl Nitrogen			102.0		%		75-125	17-DEC-19
<b>WG3244543-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>WG3244543-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19



## Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4944841							
<b>WG3244543-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>WG3244543-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	17-DEC-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4945477							
<b>WG3244219-6 LCS</b>								
Total Suspended Solids			96.3		%		85-115	17-DEC-19
<b>WG3244219-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	17-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4942279							
<b>WG3241383-5 LCS</b>								
Turbidity			96.5		%		85-115	12-DEC-19
<b>WG3241383-4 MB</b>								
Turbidity			<0.10		NTU		0.1	12-DEC-19

# Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2394989

Report Date: 19-DEC-19

Page 11 of 11

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	10-DEC-19 13:00	16-DEC-19 10:00	0.25	141	hours	EHTR-FM
	2	10-DEC-19 13:45	16-DEC-19 10:00	0.25	140	hours	EHTR-FM
	3	10-DEC-19 11:30	16-DEC-19 10:00	0.25	143	hours	EHTR-FM
	4	10-DEC-19 15:30	16-DEC-19 10:00	0.25	138	hours	EHTR-FM
	5	10-DEC-19 14:40	16-DEC-19 10:00	0.25	139	hours	EHTR-FM
	6	10-DEC-19 13:45	16-DEC-19 10:00	0.25	140	hours	EHTR-FM
	7	10-DEC-19 12:10	16-DEC-19 10:00	0.25	142	hours	EHTR-FM
	8	10-DEC-19 12:40	16-DEC-19 10:00	0.25	141	hours	EHTR-FM
	9	10-DEC-19 14:00	16-DEC-19 10:00	0.25	140	hours	EHTR-FM
pH							
	1	10-DEC-19 13:00	13-DEC-19 11:30	0.25	71	hours	EHTR-FM
	2	10-DEC-19 13:45	13-DEC-19 11:30	0.25	70	hours	EHTR-FM
	3	10-DEC-19 11:30	13-DEC-19 11:30	0.25	72	hours	EHTR-FM
	4	10-DEC-19 15:30	13-DEC-19 11:30	0.25	68	hours	EHTR-FM
	5	10-DEC-19 14:40	13-DEC-19 11:30	0.25	69	hours	EHTR-FM
	6	10-DEC-19 13:45	13-DEC-19 11:30	0.25	70	hours	EHTR-FM
	7	10-DEC-19 12:10	13-DEC-19 11:30	0.25	71	hours	EHTR-FM
	8	10-DEC-19 12:40	13-DEC-19 11:30	0.25	71	hours	EHTR-FM
	9	10-DEC-19 14:00	13-DEC-19 11:30	0.25	70	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	5	10-DEC-19 14:40	16-DEC-19 12:00	3	6	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2394989 were received on 11-DEC-19 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



L2394989-COFC

COC Number: 19 -

Page 1 of 3

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																						
Contact and company name below will appear on the final report		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																						
Company:	SNC-Lavalin ~Nelson	Quality Control (QC) Report with Report <input type="checkbox"/> NO		PRIORITY (Business Days)	4 day [P4-20%] <input type="checkbox"/>						EMERGENCY	1 Business day [E1 - 100%] <input type="checkbox"/>														
Contact:	Katrina Cheung	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input type="checkbox"/>							Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/>														
Phone:	Tel.:604-515-5151 x 129 Cell.: 778-990-6576	Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>						[Laboratory opening fees may apply]																
Company address below will appear on the final report		Emails: SNC - 'Katrina.Cheung'		Date and Time Required for all E&P TATs:																						
Street:	520 Lake Street	'Genevieve.Pomerleau', 'Vicky.Lipinski@snc-lavalin.com'		For tests that can not be performed according to the service level selected, you will be contacted.																						
City/Province:	Nelson, BC	Teck - 'Jenni.Kropp', 'Crystal.Sabel@teck.com'		Analysis Request																						
Postal Code:	V1L 4C6	Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																						
Invoice To:	Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P	P	F/P																				
Company:		Emails: Katrina.Cheung@snc-lavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCM DGG O-Met +Hg (MET-D-BCM DGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)													
Contact:		payables@snc-lavalin.com		SAMPLES ON HOLD																						
Project Information		Oil and Gas Required Fields (client use)		SAMPLE IS HAZARDOUS (please provide further details)																						
ALS Account # / Quote #:	MOR125 / Q72340	AFE/Cost Center: PO#		NUMBER OF CONTAINERS																						
Job #:	658004	Major/Minor Code: Routing Code:																								
PO / AFE:	658004	Requisitioner:																								
Location:		Location:																								
ALS Lab Work Order # (lab use only):		ALS Contact:	Ryan Smyth 403-407-1795	Sampler:	AH/MB/IC/hh																					
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCM DGG O-Met +Hg (MET-D-BCM DGG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)											
1	GH_MW-MC-1S_WG_2019_12.10.NP	GH_MW-MC-1S	10-DEC-19	13:00	Water	R	R	R	R	R	R	R	R	R	R											5
2	GH_MW-MC-1D_WG_2019_12.10.NP	GH_MW-MC-1D	10-DEC-19	13:45	Water	R	R	R	R	R	R	R	R	R	R											5
<del>3</del>	<del>GH_MW-MC-2S_WG_2019__NP</del>	<del>GH_MW-MC-2S</del>	<del>10-DEC-19</del>	<del>11:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>3</del>	<del>GH_MW-MC-2D_WG_2019_12.10.NP</del>	<del>GH_MW-MC-2D</del>	<del>10-DEC-19</del>	<del>11:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-1S_WG_2019__NP</del>	<del>GH_MW-Willow-1S</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-1D_WG_2019__NP</del>	<del>GH_MW-Willow-1D</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-2S_WG_2019__NP</del>	<del>GH_MW-Willow-2S</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-2D_WG_2019__NP</del>	<del>GH_MW-Willow-2D</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
4	GH_MW-Willow-3S_WG_2019_12.10.NP	GH_MW-Willow-3S	10-DEC-19	15:30	Water	R	R	R	R	R	R	R	R	R	R											5
<del>4</del>	<del>GH_MW-Willow-3D_WG_2019__NP</del>	<del>GH_MW-Willow-3D</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-1S_WG_2019__NP</del>	<del>GH_MW-Willow-1S</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
<del>4</del>	<del>GH_MW-Willow-1D_WG_2019__NP</del>	<del>GH_MW-Willow-1D</del>	<del>10-DEC-19</del>	<del>15:30</del>	<del>Water</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>										<del>5</del>	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																						
Are samples taken from a Regulated DW System? <input type="checkbox"/> <input checked="" type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																						
Are samples for human consumption/ use? <input type="checkbox"/> <input checked="" type="checkbox"/>		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																						
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																						
				INITIAL COOLER TEMPERATURES °C: 20																						
				FINAL COOLER TEMPERATURES °C:																						
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																				
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEP 2017 FROM

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2394989-COFC

COC Number: 19 -

Page 2 of 3

www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																
Company: SNC-Lavalin ~Nelson		Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT If received by 3 pm - business days - no surcharges apply																
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> NO <input type="checkbox"/>		<b>PRIORITY (Business Days)</b>		<b>EMERGENCY</b>														
Phone: Tel.: 604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		4 day [P4-20%] <input type="checkbox"/>		1 Business day [E1 - 100%] <input type="checkbox"/>														
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		3 day [P3-25%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200% <input type="checkbox"/>														
				2 day [P2-60%] <input type="checkbox"/>		(Laboratory opening fees may apply) ]														
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'		Date and Time Required for all E&P TATs:																
City/Province: Nelson, BC		'Genevieve.Pomerleau', Vicky.Lipinski@sncilavalin.com		For tests that can not be performed according to the service level selected, you will be contacted.																
Postal Code: V1L 4C6		Teck - 'Jenni.Kropp', Crystal.Sabel@teck.com		<b>Analysis Request</b>																
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F/P	P	F/P														
Company:		Emails: Katrina.Cheung@sncilavalin.com		DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS				
Contact:		payables@sncilavalin.com																		
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																		
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#																		
Job #: 658004		Major/Minor Code: Routing Code:																		
PO / AFE: 658004		Requisitioner:																		
LSD:		Location:																		
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1795		Sampler: <i>RU/MB/IC/Gh</i>																
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	DOC (C-DIS-ORG-LOW-CL)	TOC (C-TOT-ORG-LOW-CL)	BCMDG D-Met +Hg (MET-D-BCMDG-CL)	Total N Calc. (N-T-CALC-CL)	Nitrate + Nitrite Calc. (N2N3-CALC-CL)	Teck Routine (TECKCOAL-ROUTINE-CL)	TKN (TKN-L-F-CL)	Bicarbonate (BIC-CL)	Carbonate (CO3-CL)	Hydroxide (OH-CL)	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS		
	<del>GH_MW_Well2S_WG_2019__NP</del>	<del>GH_MW_Well2S</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW_Well2D_WG_2019__NP</del>	<del>GH_MW_Well2D</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW_FC1_WG_2019__NP</del>	<del>GH_MW_FC1</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW_FC2_WG_2019__NP</del>	<del>GH_MW_FC2</del>			Water	R	R	R	R	R	R	R	R	R	R					
	GH_MW_LC1-A_WG_2019 <i>12-10</i> NP	GH_MW_LC1-A	<i>10-DEC-19</i>	<i>14:40</i>	Water	R	R	R	R	R	R	R	R	R	R			<i>5</i>		
	GH_MW_LC1-B_WG_2019 <i>12-10</i> NP	GH_MW_LC1-B	<i>10-DEC-19</i>	<i>13:45</i>	Water	R	R	R	R	R	R	R	R	R	R			<i>5</i>		
	GH_MW_LC2-A_WG_2019 <i>12-10</i> NP	GH_MW_LC2-A	<i>10-DEC-19</i>	<i>12:10</i>	Water	R	R	R	R	R	R	R	R	R	R			<i>5</i>		
	GH_MW_LC2-B_WG_2019 <i>12-10</i> NP	GH_MW_LC2-B	<i>10-DEC-19</i>	<i>12:40</i>	Water	R	R	R	R	R	R	R	R	R	R			<i>5</i>		
	<del>GH_MW_WC1-A_WG_2019__NP</del>	<del>GH_MW_WC1-A</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW_WC1-B_WG_2019__NP</del>	<del>GH_MW_WC1-B</del>			Water	R	R	R	R	R	R	R	R	R	R					
	<del>GH_MW_WC1-C_WG_2019__NP</del>	<del>GH_MW_WC1-C</del>			Water	R	R	R	R	R	R	R	R	R	R					
<b>Drinking Water (DW) Samples (client use)</b>		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO teckcoal@equisonline.com		Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human consumption/ use? <input type="checkbox"/>		Teck Facility Name: (please select the applicable Facility)		Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
		GHO-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS		Cooling Initiated <input type="checkbox"/>																
				INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																
				27 27																
<b>SHIPMENT RELEASE (client use)</b>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>														
Released by: <i>[Signature]</i> Date: <i>Dec 10, 2019</i> Time: <i>16:00</i>			Received by: <i>[Signature]</i> Date: <i>12/11</i> Time: <i>08:40</i>			Received by: _____ Date: _____ Time: _____														





www.alsglobal.com

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>			<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>																	
Company: SNC-Lavalin ~Nelson		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply																	
Contact: Katrina Cheung		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> NO			4 day [P4-20%] <input checked="" type="checkbox"/>					EMERGENCY 1 Business day [E1 - 100%] <input checked="" type="checkbox"/>												
Phone: Tel.:604-515-5151 x 129 Cell.: 778-990-6576		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			3 day [P3-25%] <input checked="" type="checkbox"/>					Same Day, Weekend or Statutory holiday [E2 -200%] <input checked="" type="checkbox"/>												
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			2 day [P2-50%] <input checked="" type="checkbox"/>					[Laboratory opening fees may apply]												
Street: 520 Lake Street		Emails: SNC - 'Katrina.Cheung'			Date and Time Required for all E&P TATs:																	
City/Province: Nelson, BC		'Genevieve.Pomerleau', Vicky.Lipinski@snc-lavalin.com			For tests that can not be performed according to the service level selected, you will be contacted.																	
Postal Code: V1L 4C6		Teck - 'Jenni.Kropp', Crystal.Sabel@teck.com			<b>Analysis Request</b>																	
Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	F/P															
Company:		Emails: Katrina.Cheung@snc-lavalin.com			DOC (C-DIS-ORG-LOW-CL)																	
Contact:		payables@snc-lavalin.com			TOC (C-TOT-ORG-LOW-CL)																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>			BCMDGG D-Met. +Hg (MET-D-BCMDGG-CL)																	
ALS Account # / Quote #: MOR125 / Q72340		AFE/Cost Center: PO#			Total N Calc. (N-T-CALC-CL)																	
Job #: 658004		Major/Minor Code: Routing Code:			Nitrate + Nitrite Calc. (N2N3-CALC-CL)																	
PO / AFE: 658004		Requisitioner:			Teck Routine (TECKCOAL-ROUTINE-CL)																	
LSD:		Location:			TKN (TKN-L-F-CL)																	
ALS Lab Work Order # (lab use only):		ALS Contact: Ryan Smyth 403-407-1795			Bicarbonate (BIC-CL)																	
		Sampler: <u>MM/MS/IC/66</u>			Carbonate (CO3-CL)																	
					Hydroxide (OH-CL)																	
					Teck Routine (TECKCOAL-ROUTINE-CL)*																	
					*Remove CL-CATIONS-D-CCMS (REP) +																	
					*Remove MET-D-CCMS-CL +																	
					*Remove IONBALANCE-BC-CL +																	
					*Remove TECKCOAL-IONBAL-CL																	
					SAMPLES ON HOLD																	
					Sample is hazardous (please provide further details)																	
					NUMBER OF CONTAINERS																	
ALS Sample # (lab use only)	Sample Identification &/or Coordinates (This description will appear on the report)	Teck Sample Location (sys_loc_code) (For Teck data upload to EQUIS database)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type																	
	GH_MW_MC10-A_WG_2019_1210_NP	GH_MW_MC10-A			Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	1
	GH_MW_MC10-A_WG_2019_1210_NP	GH_MW_MC10-A	10-DEC-19		Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	5
	GH_MW_MC10-A_WG_2019_1210_NP	GH_MW_MC10-A			Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	1
	GH_MW_MC10-B_WG_2019_1210_NP	GH_MW_MC10-B			Water		R		R		R		R		R		R		R		R	1
	GH_MW_MC10-C_WG_2019_1210_NP	GH_MW_MC10-C			Water	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	1
	GH_MW_MC10-D_WG_2019_1210_NP	GH_MW_MC10-D			Water	R		R														1
					Water																	1
					Water																	1
					Water																	1
					Water																	1
					Water																	1
					Water																	1
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)			SAMPLE CONDITION AS RECEIVED (lab use only)																	
Are samples taken from a Regulated DW System? <input type="checkbox"/>		PLEASE ALSO SUBMIT EQUIS UPLOAD TO <a href="mailto:teckcoal@equisonline.com">teckcoal@equisonline.com</a>			Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human consumption/ use? <input type="checkbox"/>		Teck Facility Name: (please select the applicable Facility)			Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
		OHQ-GREENHILLS OPERATION FRO-FORDING RIVER OPERATION EVO-ELKVIEW OPERATIONS			Cooling Initiated <input type="checkbox"/>																	
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C												
					27																	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)																	
Released by: <u>Mr. Keith</u>		Received by: <u>DK</u>			Date: <u>Dec 10, 2019</u>		Date: <u>12/11</u>		Time: <u>16:00</u>		Time: <u>06:40</u>		Received by:		Date:		Time:					



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 16-JAN-19  
Report Date: 23-JAN-19 17:50 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2221295  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190115Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2221295-1 WG 15-JAN-19 10:45 EV_GV3GW_WG_ 2019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	612			
	Hardness (as CaCO3) (mg/L)	361			
	pH (pH)	8.23			
	ORP (mV)	288			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	413	DLHC		
	Turbidity (NTU)	0.41			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	204			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	204			
	Ammonia as N (mg/L)	0.0247			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.56			
	Fluoride (F) (mg/L)	0.489			
	Ion Balance (%)	105			
	Nitrate (as N) (mg/L)	0.133			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.056			
	Total Nitrogen (mg/L)	0.188			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	137			
	Anion Sum (meq/L)	7.01			
	Cation Sum (meq/L)	7.39			
	Cation - Anion Balance (%)	2.6			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2221295-1 WG 15-JAN-19 10:45 EV_GV3GW_WG_ 2019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0190			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.014			
	Cadmium (Cd)-Dissolved (ug/L)	0.0095			
	Calcium (Ca)-Dissolved (mg/L)	88.7			
	Chromium (Cr)-Dissolved (mg/L)	0.00024			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0159			
	Magnesium (Mg)-Dissolved (mg/L)	33.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00017			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000963			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	1.24			
	Selenium (Se)-Dissolved (ug/L)	3.85			
	Silicon (Si)-Dissolved (mg/L)	3.32			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.56			
	Strontium (Sr)-Dissolved (mg/L)	0.585			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00177			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2221295-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2221295-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2221295-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2221295-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2221295-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA**      Water      Hardness      APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA**      Water      Diss. Mercury in Water by CVAAS or CVAFS      APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**      Water      Total Nitrogen (Calculation)      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**      Water      Phosphorus (P)-Total Dissolved      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20190115Q1GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4457855							
<b>WG2973875-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	21-JAN-19
<b>WG2973875-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	21-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4461567							
<b>WG2974061-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	21-JAN-19
<b>WG2974061-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4454807							
<b>WG2972211-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.9		%		80-120	18-JAN-19
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10</b>	<b>LCS</b>							
Bromide (Br)			101.0		%		85-115	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4456707							
<b>WG2973280-8</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.2		%		80-120	18-JAN-19
<b>WG2973280-7</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4456707							
<b>WG2973280-8</b>	<b>LCS</b>							
Total Organic Carbon			93.7		%		80-120	18-JAN-19
<b>WG2973280-7</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10</b>	<b>LCS</b>							
Chloride (Cl)			99.2		%		90-110	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	16-JAN-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4452889							
<b>WG2971876-3</b>	<b>DUP</b>	<b>L2221295-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	17-JAN-19
<b>WG2971876-2</b>	<b>LCS</b>							
Colour, True			102.6		%		85-115	17-JAN-19
<b>WG2971876-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	17-JAN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4461567							
<b>WG2974061-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.8		%		90-110	21-JAN-19
<b>WG2974061-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-JAN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10</b>	<b>LCS</b>							
Fluoride (F)			103.5		%		90-110	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	16-JAN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4453882							
<b>WG2972599-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.9		%		80-120	18-JAN-19
<b>WG2972599-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	18-JAN-19
Batch	R4456049							
<b>WG2972599-7</b>	<b>DUP</b>	<b>L2221295-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	19-JAN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	18-JAN-19
Antimony (Sb)-Dissolved			97.4		%		80-120	18-JAN-19
Arsenic (As)-Dissolved			98.3		%		80-120	18-JAN-19
Barium (Ba)-Dissolved			98.8		%		80-120	18-JAN-19
Bismuth (Bi)-Dissolved			91.5		%		80-120	18-JAN-19
Boron (B)-Dissolved			94.7		%		80-120	18-JAN-19
Cadmium (Cd)-Dissolved			103.2		%		80-120	18-JAN-19
Calcium (Ca)-Dissolved			96.4		%		80-120	18-JAN-19
Chromium (Cr)-Dissolved			99.0		%		80-120	18-JAN-19
Cobalt (Co)-Dissolved			99.8		%		80-120	18-JAN-19
Copper (Cu)-Dissolved			98.3		%		80-120	18-JAN-19
Iron (Fe)-Dissolved			98.4		%		80-120	18-JAN-19
Lead (Pb)-Dissolved			94.5		%		80-120	18-JAN-19
Lithium (Li)-Dissolved			90.1		%		80-120	18-JAN-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	18-JAN-19
Manganese (Mn)-Dissolved			102.1		%		80-120	18-JAN-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	18-JAN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	18-JAN-19
Potassium (K)-Dissolved			100.2		%		80-120	18-JAN-19
Selenium (Se)-Dissolved			103.0		%		80-120	18-JAN-19
Silicon (Si)-Dissolved			108.7		%		60-140	18-JAN-19
Silver (Ag)-Dissolved			92.0		%		80-120	18-JAN-19
Sodium (Na)-Dissolved			104.4		%		80-120	18-JAN-19
Strontium (Sr)-Dissolved			98.7		%		80-120	18-JAN-19
Thallium (Tl)-Dissolved			93.0		%		80-120	18-JAN-19
Tin (Sn)-Dissolved			96.0		%		80-120	18-JAN-19
Titanium (Ti)-Dissolved			99.8		%		80-120	18-JAN-19
Uranium (U)-Dissolved			98.8		%		80-120	18-JAN-19
Vanadium (V)-Dissolved			100.4		%		80-120	18-JAN-19
Zinc (Zn)-Dissolved			98.2		%		80-120	18-JAN-19
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19



## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454807</b>							
<b>WG2972211-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4464269</b>							
<b>WG2975731-2</b>	<b>LCS</b>							
Ammonia as N			100.8		%		85-115	23-JAN-19
<b>WG2975731-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	23-JAN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10</b>	<b>LCS</b>							
Nitrite (as N)			104.7		%		90-110	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-JAN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	16-JAN-19
<b>WG2971651-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4454108							
<b>WG2972065-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	17-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4460251							
<b>WG2974576-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.9		%		80-120	19-JAN-19
<b>WG2974576-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-JAN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4460251							
<b>WG2974576-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			105.9		%		80-120	19-JAN-19
<b>WG2974576-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-JAN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4461567							
<b>WG2974061-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	21-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4452750							
<b>WG2971203-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			106.6		%		80-120	16-JAN-19
<b>WG2971203-13</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4452750							
<b>WG2971203-13 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4451833							
<b>WG2971651-10 LCS</b>								
Sulfate (SO4)			99.3		%		90-110	16-JAN-19
<b>WG2971651-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	16-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4458634							
<b>WG2972426-5 LCS</b>								
Total Dissolved Solids			103.2		%		85-115	18-JAN-19
<b>WG2972426-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	18-JAN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4460088							
<b>WG2971625-2 LCS</b>								
Total Kjeldahl Nitrogen			104.5		%		75-125	22-JAN-19
<b>WG2971625-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JAN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4460688							
<b>WG2973703-6 LCS</b>								
Total Suspended Solids			98.1		%		85-115	21-JAN-19
<b>WG2973703-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	21-JAN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4454007							
<b>WG2972046-8 LCS</b>								
Turbidity			97.5		%		85-115	17-JAN-19
<b>WG2972046-7 MB</b>								
Turbidity			<0.10		NTU		0.1	17-JAN-19

# Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2221295

Report Date: 23-JAN-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	15-JAN-19 10:45	17-JAN-19 09:00	0.25	46	hours	EHTR-FM
pH	1	15-JAN-19 10:45	21-JAN-19 15:00	0.25	148	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2221295 were received on 16-JAN-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: 20190115Q1GW		TURNAROUND TIME:		RUSH:				
PROJECT/CLIENT INFO				LABORATORY		OTHER INFO		
Facility Name / Job: Elkview Operations		Lab Name: ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Job Description: Q1 Ground Water Sampling		Lab Contact: Lyndylia Shvets		Email 1: bryan.ogden@teck.com		X	X	X
Project Manager: Cameron Griffin		Email: lyndylia.shvets@alsglobal.com		Email 2: teckcoal@equionline.com				X
Email: Cameron.Griffin@Teck.com		Address: 2559 29 St NE,		Email 3: Kimberley.hackett@teck.com		X	X	X
Address: RR#1 HWY#3				Email 4: Cameron.Griffin@teck.com		X	X	X
				Email 5: teck.lab.results@sharepoint.teck.com		X	X	X
City: Sparwood		Province: BC	City: Calgary	Province: AB	PO # 488308 VPO.00.02.0.852			
Postal Code: V1C 4C3		Country: Canada	Postal Code: T1Y 7B5	Country: Canada				
Phone Number: 1-250-865-5289		Phone Number: 1-403-291-9897						

**SAMPLE DETAILS**



L2221295-COFC

Sam	Surr	Fiel	Hazardous Material (Yes/No)	Date	Time (2-4hr)	G=Grab C=Comp	# Of Cont.	FIELD ANALYSIS (Yes/No)	ANALYSIS REQUESTED											
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	
									TECK COAL-ROUTINE-VIA (E051)	True Colour	TECK COAL-MET-D-VIA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	
EV_GV3gw_WG_2019-01_NP	EV_GV3gw	WG	N	1/15/2019	10:45	G	5		1		1		1							1
Total							5													

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	<b>RELINQUISHED BY/AFFILIATION</b> Kim Hackett	<b>DATE/TIME</b> January 15, 2019	<b>ACCEPTED BY/AFFILIATION</b> DK	<b>DATE/TIME</b> 2019/01/16 0930
--	---	--------------------------------------	--------------------------------------	--

<b># NB OF BOTTLES RETURNED/DESCRIPTION</b> Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<b>Sampler's Name</b> Kim Hackett	<b>Mobile #</b>
	<b>Sampler's Signature</b> 	<b>Date/Time</b> January 15, 2019



# Teck

COC ID:

20190115Q1GW

TURNAROUND TIME:

RUSH:

**PROJECT/CLIENT INFO**

**LABORATORY**

**OTHER INFO**

Facility Name / Job# Elkview Operations  
 Job Description Q1 Ground Water Sampling  
 Project Manager Cameron Griffin  
 Email Cameron.Griffin@Teck.com  
 Address RR#1 HWY# 3

Lab Name ALS Calgary  
 Lab Contact Lyndyia Shwets  
 Email lyndyia.shwets@alsglobal.com  
 Address 2559 29 St NE

Report Format / Distribution  
 Email 1: Bryan.Ogden@teck.com  
 Email 2: teckcoal@aquahome.com  
 Email 3: kimberley.hackett@teck.com  
 Email 4: Cameron.Griffin@teck.com  
 Email 5: Teck.Lab.Support@lab-report.teck.com

Excel  
 PDF  
 EDD

City Sparwood  
 Postal Code V1C 4C3  
 Phone Number 1-250-865-5289

Province BC  
 Country Canada

City Calgary  
 Postal Code T1Y 7B5  
 Phone Number 1 403 291 9897

Province AB  
 Country Canada

PO # 53444 VPO 00610852

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

**PHYSICAL PROPERTIES**



L2221295-COFC

Sample	Site	Field	Hazardous Material (Yes/No)	Date	Time (2-4hr)	G-Grab C=Comp	# Of Cont.	Filtered	Preserved	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	
										TECK COAL-ROUTINE-VIA (E305.1)	True Colour	TECK COAL-MET-D-VIA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TKC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	IEPH (C10-C33)	D-Mercury	
EV_GV3gw_WG_2019-01_NP	EV_GV3gw	WG	N	1/15/2019	10:45	G	5			1		1		1							1
							Total	5													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kim Hackett	January 15, 2019	DK	2019/01/16 0930

NUMBER OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kim Hackett <i>Kim Hackett</i>	
	Sampler's Signature	Date/Time
		January 15, 2019



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 17-JAN-19  
Report Date: 25-JAN-19 18:35 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2221845  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190116Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2221845-1 WG 16-JAN-19 13:40 EV_ECGW_WG_2 019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	392			
	Hardness (as CaCO3) (mg/L)	171			
	pH (pH)	8.09			
	ORP (mV)	334			
	Total Suspended Solids (mg/L)	221			
	Total Dissolved Solids (mg/L)	289 <sup>DLHC</sup>			
	Turbidity (NTU)	173			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	217			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	217			
	Ammonia as N (mg/L)	0.166			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.67			
	Fluoride (F) (mg/L)	0.843			
	Ion Balance (%)	93.3			
	Nitrate (as N) (mg/L)	0.0579			
	Nitrite (as N) (mg/L)	0.0052			
	Total Kjeldahl Nitrogen (mg/L)	0.406			
	Total Nitrogen (mg/L)	0.469			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0138			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0143			
	Phosphorus (P)-Total (mg/L)	0.291 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	25.7			
	Anion Sum (meq/L)	4.94			
	Cation Sum (meq/L)	4.61			
	Cation - Anion Balance (%)	-3.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.23			
	Total Organic Carbon (mg/L)	<2.5			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00039			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2221845-1 WG 16-JAN-19 13:40 EV_ECGW_WG_2 019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0540			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.118			
	Cadmium (Cd)-Dissolved (ug/L)	0.0158			
	Calcium (Ca)-Dissolved (mg/L)	37.8			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.30			
	Copper (Cu)-Dissolved (mg/L)	0.00083			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0108			
	Magnesium (Mg)-Dissolved (mg/L)	18.5			
	Manganese (Mn)-Dissolved (mg/L)	0.179			
	Mercury (Hg)-Dissolved (mg/L)	0.000063			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0146			
	Nickel (Ni)-Dissolved (mg/L)	0.00161			
	Potassium (K)-Dissolved (mg/L)	0.992			
	Selenium (Se)-Dissolved (ug/L)	0.072			
	Silicon (Si)-Dissolved (mg/L)	5.00			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	26.7			
	Strontium (Sr)-Dissolved (mg/L)	0.449			
	Thallium (Tl)-Dissolved (mg/L)	0.000028			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00124			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0021			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Lead (Pb)-Dissolved	B	L2221845-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2221845-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2221845-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2221845-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2221845-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2221845-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2221845-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2221845-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190116Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4463107							
<b>WG2975227-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.8		%		85-115	22-JAN-19
<b>WG2975227-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	22-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4465236							
<b>WG2975665-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	23-JAN-19
<b>WG2975665-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4455849							
<b>WG2972978-3</b>	<b>DUP</b>	<b>L2221845-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-JAN-19
<b>WG2972978-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.5		%		80-120	18-JAN-19
<b>WG2972978-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4454672							
<b>WG2972696-10</b>	<b>LCS</b>							
Bromide (Br)			102.3		%		85-115	17-JAN-19
<b>WG2972696-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	17-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4456632							
<b>WG2973317-18</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.9		%		80-120	18-JAN-19
<b>WG2973317-17</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4456632							
<b>WG2973317-18</b>	<b>LCS</b>							
Total Organic Carbon			102.4		%		80-120	18-JAN-19
<b>WG2973317-17</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-JAN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4454672							
<b>WG2972696-10</b>	<b>LCS</b>							
Chloride (Cl)			101.4		%		90-110	17-JAN-19
<b>WG2972696-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	17-JAN-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4456078							
<b>WG2972918-2</b>	<b>LCS</b>							
Colour, True			103.3		%		85-115	18-JAN-19
<b>WG2972918-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	18-JAN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4465236							
<b>WG2975665-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.4		%		90-110	23-JAN-19
<b>WG2975665-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-JAN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4454672							
<b>WG2972696-10</b>	<b>LCS</b>							
Fluoride (F)			105.2		%		90-110	17-JAN-19
<b>WG2972696-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	17-JAN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4459627							
<b>WG2973489-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.2		%		80-120	22-JAN-19
<b>WG2973489-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	22-JAN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4455849							
<b>WG2972978-3</b>	<b>DUP</b>	<b>L2221845-1</b>						
Aluminum (Al)-Dissolved			<0.0030	<0.0030	RPD-NA	mg/L	N/A	20
Antimony (Sb)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20
Arsenic (As)-Dissolved			0.00039	0.00042		mg/L	6.8	20
Barium (Ba)-Dissolved			0.0540	0.0534		mg/L	1.2	20
Bismuth (Bi)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20
Boron (B)-Dissolved			0.118	0.117		mg/L	1.2	20



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4455849</b>							
<b>WG2972978-3</b>	<b>DUP</b>	<b>L2221845-1</b>						
Cadmium (Cd)-Dissolved		0.0000158	0.0000165		mg/L	4.2	20	18-JAN-19
Calcium (Ca)-Dissolved		37.8	37.1		mg/L	1.8	20	18-JAN-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Cobalt (Co)-Dissolved		0.00030	0.00030		mg/L	0.7	20	18-JAN-19
Copper (Cu)-Dissolved		0.00083	0.00083		mg/L	0.6	20	18-JAN-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-JAN-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-JAN-19
Lithium (Li)-Dissolved		0.0108	0.0107		mg/L	0.7	20	18-JAN-19
Magnesium (Mg)-Dissolved		18.5	18.7		mg/L	0.9	20	18-JAN-19
Manganese (Mn)-Dissolved		0.179	0.179		mg/L	0.4	20	18-JAN-19
Molybdenum (Mo)-Dissolved		0.0146	0.0150		mg/L	2.9	20	18-JAN-19
Nickel (Ni)-Dissolved		0.00161	0.00165		mg/L	2.6	20	18-JAN-19
Potassium (K)-Dissolved		0.992	0.999		mg/L	0.6	20	18-JAN-19
Selenium (Se)-Dissolved		0.000072	0.000072		mg/L	0.8	20	18-JAN-19
Silicon (Si)-Dissolved		5.00	5.01		mg/L	0.1	20	18-JAN-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-JAN-19
Sodium (Na)-Dissolved		26.7	26.6		mg/L	0.5	20	18-JAN-19
Strontium (Sr)-Dissolved		0.449	0.457		mg/L	1.7	20	18-JAN-19
Thallium (Tl)-Dissolved		0.000028	0.000026		mg/L	6.5	20	18-JAN-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-JAN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-JAN-19
Uranium (U)-Dissolved		0.00124	0.00123		mg/L	1.0	20	18-JAN-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JAN-19
Zinc (Zn)-Dissolved		0.0021	0.0020		mg/L	5.6	20	18-JAN-19
<b>WG2972978-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.0		%		80-120	18-JAN-19
Antimony (Sb)-Dissolved			98.2		%		80-120	18-JAN-19
Arsenic (As)-Dissolved			95.1		%		80-120	18-JAN-19
Barium (Ba)-Dissolved			97.0		%		80-120	18-JAN-19
Bismuth (Bi)-Dissolved			97.9		%		80-120	18-JAN-19
Boron (B)-Dissolved			98.3		%		80-120	18-JAN-19
Cadmium (Cd)-Dissolved			91.1		%		80-120	18-JAN-19
Calcium (Ca)-Dissolved			97.5		%		80-120	18-JAN-19
Chromium (Cr)-Dissolved			98.9		%		80-120	18-JAN-19



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4455849</b>							
<b>WG2972978-2</b>	<b>LCS</b>							
Cobalt (Co)-Dissolved			97.4		%		80-120	18-JAN-19
Copper (Cu)-Dissolved			94.7		%		80-120	18-JAN-19
Iron (Fe)-Dissolved			93.6		%		80-120	18-JAN-19
Lead (Pb)-Dissolved			96.1		%		80-120	18-JAN-19
Lithium (Li)-Dissolved			100.6		%		80-120	18-JAN-19
Magnesium (Mg)-Dissolved			98.3		%		80-120	18-JAN-19
Manganese (Mn)-Dissolved			98.6		%		80-120	18-JAN-19
Molybdenum (Mo)-Dissolved			96.0		%		80-120	18-JAN-19
Nickel (Ni)-Dissolved			96.6		%		80-120	18-JAN-19
Potassium (K)-Dissolved			98.3		%		80-120	18-JAN-19
Selenium (Se)-Dissolved			94.7		%		80-120	18-JAN-19
Silicon (Si)-Dissolved			103.7		%		60-140	18-JAN-19
Silver (Ag)-Dissolved			93.1		%		80-120	18-JAN-19
Sodium (Na)-Dissolved			105.3		%		80-120	18-JAN-19
Strontium (Sr)-Dissolved			98.8		%		80-120	18-JAN-19
Thallium (Tl)-Dissolved			100.4		%		80-120	18-JAN-19
Tin (Sn)-Dissolved			91.9		%		80-120	18-JAN-19
Titanium (Ti)-Dissolved			96.6		%		80-120	18-JAN-19
Uranium (U)-Dissolved			98.0		%		80-120	18-JAN-19
Vanadium (V)-Dissolved			100.2		%		80-120	18-JAN-19
Zinc (Zn)-Dissolved			95.0		%		80-120	18-JAN-19
<b>WG2972978-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JAN-19



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4455849</b>							
<b>WG2972978-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			0.000055	B	mg/L		0.00005	18-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JAN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4469386</b>							
<b>WG2977296-6</b>	<b>LCS</b>							
Ammonia as N			102.4		%		85-115	25-JAN-19
<b>WG2977296-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-JAN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454672</b>							
<b>WG2972696-10</b>	<b>LCS</b>							
Nitrite (as N)			106.7		%		90-110	17-JAN-19
<b>WG2972696-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	17-JAN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4454672</b>							
<b>WG2972696-10</b>	<b>LCS</b>							
Nitrate (as N)			101.6		%		90-110	17-JAN-19
<b>WG2972696-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4454672							
<b>WG2972696-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	17-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4459248							
<b>WG2974168-5 CRM</b>		<b>CL-ORP</b>						
ORP			222		mV		210-230	21-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4460251							
<b>WG2974576-6 LCS</b>								
Phosphorus (P)-Total			107.4		%		80-120	20-JAN-19
<b>WG2974576-5 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-JAN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4460251							
<b>WG2974576-6 LCS</b>								
Phosphorus (P)-Total Dissolved			107.4		%		80-120	20-JAN-19
<b>WG2974576-5 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	20-JAN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4465236							
<b>WG2975665-5 LCS</b>								
pH			7.02		pH		6.9-7.1	23-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4455690							
<b>WG2972557-2 LCS</b>								
Orthophosphate-Dissolved (as P)			106.0		%		80-120	18-JAN-19
<b>WG2972557-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	18-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4454672							
<b>WG2972696-10 LCS</b>								
Sulfate (SO4)			101.0		%		90-110	17-JAN-19
<b>WG2972696-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	17-JAN-19



## Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
Batch	R4463447							
<b>WG2974469-5</b>	<b>LCS</b>							
Total Dissolved Solids			97.7		%		85-115	22-JAN-19
<b>WG2974469-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	22-JAN-19
<b>TKN-L-F-CL</b>								
Batch	R4463052							
<b>WG2972886-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.7		%		75-125	23-JAN-19
<b>WG2972886-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	23-JAN-19
<b>TSS-L-CL</b>								
Batch	R4463807							
<b>WG2974519-6</b>	<b>LCS</b>							
Total Suspended Solids			92.4		%		85-115	22-JAN-19
<b>WG2974519-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	22-JAN-19
<b>TURBIDITY-CL</b>								
Batch	R4455747							
<b>WG2972957-9</b>	<b>DUP</b>	<b>L2221845-1</b>						
Turbidity		173	171		NTU	1.2	15	18-JAN-19
<b>WG2972957-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	18-JAN-19
<b>WG2972957-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-JAN-19

# Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2221845

Report Date: 25-JAN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	16-JAN-19 13:40	21-JAN-19 12:00	0.25	118	hours	EHTR-FM
pH	1	16-JAN-19 13:40	23-JAN-19 09:00	0.25	163	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2221845 were received on 17-JAN-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

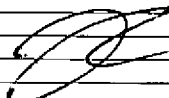
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 20190116Q1GW		TURNAROUND TIME:		RUSH:	
PROJECT/CLIENT INFO			LABORATORY		
Facility Name / Job: Ellview Operations			Lab Name: ALS Calgary		
Job Description: Q1 Ground Water Sampling			Lab Contact: Lyudmyla Shvets		
Project Manager: Cameron Griffin			Email: Lyudmyla.Shvets@alsglobal.com		
Email: Cameron.Griffin@teck.com			Address: 2559 29 St NE		
Address: RR#1 HWY#3			Report Format / Distribution		
City: Sparwood			City: Calgary		
Postal Code: V1C 4C3			Province: AB		
Phone Number: 1-250-865-5289			Postal Code: T1Y 7B5		
			Country: Canada		
			Phone Number: 1 403 291 9897		

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	C=Grab C=Comp	# Of Cont.	FILTERED UNFILTERED	ANALYSIS REQUESTED														
									TECKCOAL-ROUTINE-VIA (E105.1)	True Colour	TECKCOAL-MET-D-VIA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6030)	D-ULTRA MERCURY (SW6020)	RPB (C10-C12)	D-Mercury				
EV_ECgw_WG_2019-01_NP	EV_ECgw	WG	N	1/16/2019	13:40	G	5		1	1	1	1											
Total							5																

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	<b>RELINQUISHED BY/AFFILIATION</b> Kim Hackett	<b>DATE/TIME</b> January 16, 2019	<b>ACCEPTED BY/AFFILIATION</b> 	<b>DATE/TIME</b> 1/17 9:10
	<b>NB OF BOTTLES RETURNED/DESCRIPTION</b> Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		<b>Sampler's Name</b> Kim Hackett	<b>Mobile #</b>
<b>Sampler's Signature</b>				



L2221845-COFC

30



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 23-JAN-19  
Report Date: 30-JAN-19 17:17 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2223936  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190122Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2223936-1	L2223936-2	L2223936-3	L2223936-4	L2223936-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	22-JAN-19	22-JAN-19	22-JAN-19	22-JAN-19	22-JAN-19
		Sampled Time	12:15	12:20	12:25	09:00	10:20
		Client ID	EV_EC5GW_WG_2019-01_NP	EV_EC6GW_WG_2019-01_NP	EV_EC7GW_WG_2019-01_NP	EV_BALGW_WG_2019-01_NP	EV_LSGW_WG_2019-01_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)		431	<2.0	<2.0	734	968
	Hardness (as CaCO3) (mg/L)		231	13.8		372	571
	pH (pH)		8.18	5.46	5.44	7.87	8.19
	ORP (mV)		377	445	438	337	277
	Total Suspended Solids (mg/L)		17.0	<1.0	<1.0	88.3	11.4
	Total Dissolved Solids (mg/L)		295 <sup>DLHC</sup>	<10	<10	491 <sup>DLHC</sup>	583 <sup>DLHC</sup>
	Turbidity (NTU)		13.4	<0.10	<0.10	62.8	19.8
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		2.6	1.1	1.1	10.4	12.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		164	<1.0	<1.0	330	511
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		164	<1.0	<1.0	330	511
	Ammonia as N (mg/L)		0.0299	0.0058	0.0275	0.0161	0.110 <sup>DLHC</sup>
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.25 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)		4.05	<0.50	<0.50	1.54	9.0 <sup>DLHC</sup>
	Fluoride (F) (mg/L)		0.504	<0.020	<0.020	0.234	0.30 <sup>DLHC</sup>
	Ion Balance (%)		104	0.0	0.0	104	100 <sup>DLHC</sup>
	Nitrate (as N) (mg/L)		0.0085	<0.0050	<0.0050	0.0469	<0.025 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0050 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)		0.105	<0.050	<0.050	0.146	0.179
	Total Nitrogen (mg/L)		0.114	<0.050	<0.050	0.193	0.179
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	<0.0010	<0.0010	0.0027	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)		0.0028	<0.0020		0.0026	0.0148
	Phosphorus (P)-Total (mg/L)		0.0124	<0.0020	<0.0020	0.0705	0.0137 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)		58.6	<0.30	<0.30	94.8	72.8
	Anion Sum (meq/L)		4.65	<0.10	<0.10	8.63	12.0
	Cation Sum (meq/L)		4.82	0.30	<0.10	8.96	12.0
	Cation - Anion Balance (%)		1.9	0.0	0.0	1.9	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.76	<0.50		1.51	2.24
	Total Organic Carbon (mg/L)		1.09	<0.50	<0.50	1.40	2.26
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	LAB	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030		<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010		0.00015	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00164	<0.00010		0.00015	0.00130

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2223936-6	L2223936-7	L2223936-8		
		Description	WG	WG	WG		
		Sampled Date	22-JAN-19	22-JAN-19	22-JAN-19		
		Sampled Time	12:10	07:30	13:15		
		Client ID	EV_GCGW_WG_2 019-01_NP	EV_RCSGW_WG_ 2019-01_NP	EV_BRGW_WG_2 019-01_NP		
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0		
	Conductivity (@ 25C) (uS/cm)		434	2380	1190		
	Hardness (as CaCO3) (mg/L)		232	1670	678		
	pH (pH)		8.23	7.99	8.05		
	ORP (mV)		319	376	431		
	Total Suspended Solids (mg/L)		18.5	2.2	<1.0		
	Total Dissolved Solids (mg/L)		292 <sup>DLHC</sup>	2240 <sup>DLHC</sup>	897 <sup>DLHC</sup>		
	Turbidity (NTU)		11.9	0.22	0.62		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		2.2	15.7	10.5		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		177	285	281		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		177	285	281		
	Ammonia as N (mg/L)		0.0226	<0.0050	0.0061		
	Bromide (Br) (mg/L)		<0.050	1.09 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)		4.01	13.1 <sup>DLHC</sup>	25.3 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)		0.501	0.18 <sup>DLHC</sup>	0.13 <sup>DLHC</sup>		
	Ion Balance (%)		98.9	105	99.3		
	Nitrate (as N) (mg/L)		0.0071	31.0 <sup>DLHC</sup>	4.80 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)		<0.0010	<0.0050 <sup>DLHC</sup>	0.0068 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)		0.053	0.068	0.076		
	Total Nitrogen (mg/L)		0.060	31.1	4.88		
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	0.0028	0.0023		
	Phosphorus (P)-Total Dissolved (mg/L)		<0.0020	0.0023	0.0021		
	Phosphorus (P)-Total (mg/L)		0.0122	0.0040	0.0022		
	Sulfate (SO4) (mg/L)		58.5	1140 <sup>DLHC</sup>	357 <sup>DLHC</sup>		
	Anion Sum (meq/L)		4.90	32.0	14.1		
	Cation Sum (meq/L)		4.84	33.7	14.0		
	Cation - Anion Balance (%)		-0.6	2.6	-0.3		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.71	1.49	1.51		<sup>DTC</sup>
	Total Organic Carbon (mg/L)		0.82	1.32	0.88		<sup>DTC</sup>
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00017	0.00011		
	Arsenic (As)-Dissolved (mg/L)		0.00173	<0.00010	<0.00010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2223936-1 WG 22-JAN-19 12:15 EV_EC5GW_WG_ 2019-01_NP	L2223936-2 WG 22-JAN-19 12:20 EV_EC6GW_WG_ 2019-01_NP	L2223936-3 WG 22-JAN-19 12:25 EV_EC7GW_WG_ 2019-01_NP	L2223936-4 WG 22-JAN-19 09:00 EV_BALGW_WG_ 2019-01_NP	L2223936-5 WG 22-JAN-19 10:20 EV_LSGW_WG_20 19-01_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0745	0.00271	0.0333	0.178
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.013	<0.010	0.178	0.042
	Cadmium (Cd)-Dissolved (ug/L)	0.0074	<0.0050	0.0060	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	62.2	4.02	<0.050	95.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.22	<0.10	0.11	0.95
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00169	<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.151	0.014	<0.010	1.47
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0077	<0.0010	0.116	0.0584
	Magnesium (Mg)-Dissolved (mg/L)	18.4	0.91	<0.0050	32.6
	Manganese (Mn)-Dissolved (mg/L)	0.0892	0.00659	0.00854	0.920
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00245	0.000053	0.000531	0.00219
	Nickel (Ni)-Dissolved (mg/L)	0.00069	<0.00050	0.00092	0.00360
	Potassium (K)-Dissolved (mg/L)	0.784	0.081	<0.050	2.79
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	0.672	0.102
	Silicon (Si)-Dissolved (mg/L)	4.34	0.116	4.57	4.26
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.93	0.322	<0.050	33.5
	Strontium (Sr)-Dissolved (mg/L)	0.267	0.0156	2.30	0.446
	Thallium (Tl)-Dissolved (mg/L)	0.000030	<0.000010	<0.000010	0.000034
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00116	0.000033	0.000153	0.00259
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0030	0.0338	0.0046	0.0016

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2223936-6	L2223936-7	L2223936-8
		Description	WG	WG	WG
		Sampled Date	22-JAN-19	22-JAN-19	22-JAN-19
		Sampled Time	12:10	07:30	13:15
		Client ID	EV_GCGW_WG_2 019-01_NP	EV_RCSGW_WG_ 2019-01_NP	EV_BRGW_WG_2 019-01_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0753	0.0373	0.0680
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.014	0.022	0.040
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	0.214	0.0537
	Calcium (Ca)-Dissolved (mg/L)		62.1	351	172
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00015
	Cobalt (Co)-Dissolved (ug/L)		0.22	0.13	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	0.0524	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.150	<0.010	0.024
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.000432	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0079	0.0736	0.0533
	Magnesium (Mg)-Dissolved (mg/L)		18.7	192	60.3
	Manganese (Mn)-Dissolved (mg/L)		0.0863	0.00179	0.00348
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00239	0.00128	0.000588
	Nickel (Ni)-Dissolved (mg/L)		0.00069	0.00562	0.00212
	Potassium (K)-Dissolved (mg/L)		0.786	4.07	2.19
	Selenium (Se)-Dissolved (ug/L)		<0.050	217 <sup>DLA</sup>	25.4
	Silicon (Si)-Dissolved (mg/L)		4.46	4.66	3.49
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.96	6.39	9.39
	Strontium (Sr)-Dissolved (mg/L)		0.261	0.432	0.355
	Thallium (Tl)-Dissolved (mg/L)		0.000029	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00117	0.00797	0.00172
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0025	0.386	0.0030

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2223936-1, -2, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2223936-1, -2, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2223936-1, -2, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2223936-1, -2, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2223936-1, -2, -4, -5, -6, -7, -8
Matrix Spike	Ammonia as N	MS-B	L2223936-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Ammonia as N	MS-B	L2223936-1, -2, -3, -4, -5, -6, -7, -8

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS



## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190122Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 1 of 10

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4476569</b>							
<b>WG2979271-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	29-JAN-19
<b>WG2979271-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	29-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472707</b>							
<b>WG2978483-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	28-JAN-19
<b>WG2978483-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	28-JAN-19
<b>WG2978483-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-19
<b>WG2978483-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	26-JAN-19
<b>WG2977476-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465431</b>							
<b>WG2976167-10</b>	<b>LCS</b>							
Bromide (Br)			98.3		%		85-115	23-JAN-19
<b>WG2976167-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470767</b>							
<b>WG2977831-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			111.3		%		80-120	26-JAN-19
<b>WG2977831-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470767</b>							
<b>WG2977831-10</b>	<b>LCS</b>							
Total Organic Carbon			94.9		%		80-120	26-JAN-19
<b>WG2977831-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4470767							
<b>WG2977831-9 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	26-JAN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4465431							
<b>WG2976167-10 LCS</b>								
Chloride (Cl)			98.4		%		90-110	23-JAN-19
<b>WG2976167-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	23-JAN-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4463621							
<b>WG2975569-2 LCS</b>								
Colour, True			102.1		%		85-115	23-JAN-19
<b>WG2975569-1 MB</b>								
Colour, True			<5.0		CU		5	23-JAN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4472707							
<b>WG2978483-14 LCS</b>								
Conductivity (@ 25C)			99.2		%		90-110	28-JAN-19
<b>WG2978483-17 LCS</b>								
Conductivity (@ 25C)			99.3		%		90-110	28-JAN-19
<b>WG2978483-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-19
<b>WG2978483-16 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4465431							
<b>WG2976167-10 LCS</b>								
Fluoride (F)			102.1		%		90-110	23-JAN-19
<b>WG2976167-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	23-JAN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4474867							
<b>WG2977853-65 LCS</b>								
Mercury (Hg)-Dissolved			105.8		%		80-120	29-JAN-19
<b>WG2977853-66 LCS</b>								
Mercury (Hg)-Dissolved			106.6		%		80-120	29-JAN-19



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4474867</b>							
<b>WG2977853-67</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.8		%		80-120	29-JAN-19
<b>WG2977853-68</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.6		%		80-120	29-JAN-19
<b>WG2977853-29</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-JAN-19
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4466587</b>							
<b>WG2976492-2</b>	<b>LCS</b>	<b>TMRM</b>						
Calcium (Ca)-Dissolved			102.6		%		80-120	24-JAN-19
Magnesium (Mg)-Dissolved			96.1		%		80-120	24-JAN-19
Potassium (K)-Dissolved			101.0		%		80-120	24-JAN-19
Sodium (Na)-Dissolved			111.1		%		80-120	24-JAN-19
<b>WG2976492-1</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-JAN-19
<b>WG2976492-5</b>	<b>MS</b>	<b>L2223936-3</b>						
Calcium (Ca)-Dissolved			105.9		%		70-130	24-JAN-19
Magnesium (Mg)-Dissolved			100.6		%		70-130	24-JAN-19
Potassium (K)-Dissolved			105.5		%		70-130	24-JAN-19
Sodium (Na)-Dissolved			109.6		%		70-130	24-JAN-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.1		%		80-120	26-JAN-19
Antimony (Sb)-Dissolved			99.5		%		80-120	26-JAN-19
Arsenic (As)-Dissolved			101.9		%		80-120	26-JAN-19
Barium (Ba)-Dissolved			98.6		%		80-120	26-JAN-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	26-JAN-19
Boron (B)-Dissolved			96.0		%		80-120	26-JAN-19
Cadmium (Cd)-Dissolved			101.2		%		80-120	26-JAN-19
Calcium (Ca)-Dissolved			97.4		%		80-120	26-JAN-19
Chromium (Cr)-Dissolved			99.7		%		80-120	26-JAN-19
Cobalt (Co)-Dissolved			98.9		%		80-120	26-JAN-19



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			99.8		%		80-120	26-JAN-19
Iron (Fe)-Dissolved			98.1		%		80-120	26-JAN-19
Lead (Pb)-Dissolved			97.2		%		80-120	26-JAN-19
Lithium (Li)-Dissolved			95.6		%		80-120	26-JAN-19
Magnesium (Mg)-Dissolved			104.5		%		80-120	26-JAN-19
Manganese (Mn)-Dissolved			99.9		%		80-120	26-JAN-19
Molybdenum (Mo)-Dissolved			99.9		%		80-120	26-JAN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	26-JAN-19
Potassium (K)-Dissolved			102.2		%		80-120	26-JAN-19
Selenium (Se)-Dissolved			96.6		%		80-120	26-JAN-19
Silicon (Si)-Dissolved			97.5		%		60-140	26-JAN-19
Silver (Ag)-Dissolved			94.4		%		80-120	26-JAN-19
Sodium (Na)-Dissolved			99.5		%		80-120	26-JAN-19
Strontium (Sr)-Dissolved			96.2		%		80-120	26-JAN-19
Thallium (Tl)-Dissolved			94.7		%		80-120	26-JAN-19
Tin (Sn)-Dissolved			98.1		%		80-120	26-JAN-19
Titanium (Ti)-Dissolved			101.2		%		80-120	26-JAN-19
Uranium (U)-Dissolved			99.1		%		80-120	26-JAN-19
Vanadium (V)-Dissolved			102.7		%		80-120	26-JAN-19
Zinc (Zn)-Dissolved			104.4		%		80-120	26-JAN-19
<b>WG2977476-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-1</b>	<b>MB</b>	<b>NP</b>						
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4478047</b>							
<b>WG2980059-10</b>	<b>LCS</b>							
Ammonia as N			102.3		%		85-115	30-JAN-19
<b>WG2980059-6</b>	<b>LCS</b>							
Ammonia as N			100.4		%		85-115	30-JAN-19
<b>WG2980059-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-JAN-19
<b>WG2980059-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-JAN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465431</b>							
<b>WG2976167-10</b>	<b>LCS</b>							
Nitrite (as N)			104.1		%		90-110	23-JAN-19
<b>WG2976167-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-JAN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4465431							
<b>WG2976167-10</b>	<b>LCS</b>							
Nitrate (as N)			99.0		%		90-110	23-JAN-19
<b>WG2976167-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4469488							
<b>WG2977356-11</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	25-JAN-19
<b>WG2977356-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	25-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4472509							
<b>WG2978425-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.2		%		80-120	28-JAN-19
<b>WG2978425-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.7		%		80-120	28-JAN-19
<b>WG2978425-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-JAN-19
<b>WG2978425-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-JAN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4472509							
<b>WG2978425-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			102.5		%		80-120	28-JAN-19
<b>WG2978425-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	28-JAN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4472707							
<b>WG2978483-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-JAN-19
<b>WG2978483-17</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4467047							
<b>WG2976256-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.5		%		80-120	24-JAN-19
<b>WG2976256-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4467047							
<b>WG2976256-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.4		%		80-120	24-JAN-19
<b>WG2976256-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-19
<b>WG2976256-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4465431							
<b>WG2976167-10</b>	<b>LCS</b>							
Sulfate (SO4)			98.7		%		90-110	23-JAN-19
<b>WG2976167-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-JAN-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4474975							
<b>WG2978410-8</b>	<b>LCS</b>							
Total Dissolved Solids			103.0		%		85-115	28-JAN-19
<b>WG2978410-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	28-JAN-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4472307							
<b>WG2977134-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.5		%		75-125	28-JAN-19
<b>WG2977134-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.2		%		75-125	28-JAN-19
<b>WG2977134-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>WG2977134-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4474974							
<b>WG2978097-2</b>	<b>LCS</b>							
Total Suspended Solids			90.8		%		85-115	28-JAN-19
<b>WG2978097-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-JAN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4464407</b>							
<b>WG2975757-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	23-JAN-19
<b>WG2975757-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-JAN-19

# Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2223936

Report Date: 30-JAN-19

Page 10 of 10

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	22-JAN-19 12:15	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	2	22-JAN-19 12:20	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	3	22-JAN-19 12:25	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	4	22-JAN-19 09:00	25-JAN-19 13:10	0.25	76	hours	EHTR-FM
	5	22-JAN-19 10:20	25-JAN-19 13:10	0.25	75	hours	EHTR-FM
	6	22-JAN-19 12:10	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	7	22-JAN-19 07:30	25-JAN-19 13:10	0.25	78	hours	EHTR-FM
	8	22-JAN-19 13:15	25-JAN-19 13:10	0.25	72	hours	EHTR-FM
pH							
	1	22-JAN-19 12:15	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	2	22-JAN-19 12:20	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	3	22-JAN-19 12:25	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	4	22-JAN-19 09:00	28-JAN-19 12:00	0.25	147	hours	EHTR-FM
	5	22-JAN-19 10:20	28-JAN-19 12:00	0.25	146	hours	EHTR-FM
	6	22-JAN-19 12:10	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	7	22-JAN-19 07:30	28-JAN-19 12:00	0.25	149	hours	EHTR-FM
	8	22-JAN-19 13:15	28-JAN-19 12:00	0.25	143	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2223936 were received on 23-JAN-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: 20190122Q1GW		TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	Bryan.Ogden@teck.com	X	X	X
Project Manager	Cameron Griffin		Email	lyudmyla.shvets@alsglobal.com		Email 2:	teckcoal@equisonline.com	X	X	X
Email	Cameron.Griffin@teck.com		Address	2559 29 St NE		Email 3:	kimberley.hackett@teck.com	X	X	X
Address	RR#1 HWY#3					Email 4:	Cameron.Griffin@teck.com	X	X	X
						Email 5:	Teck.Lab.Kyruks@sharapoint.teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VPO00610852	
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	1 403 291 9897						

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	C=Grab, C=Comp	# OF Cont.	ANALYSIS REQUESTED													
								TECK COAL-ROUTINE-VA (E005.1)	True Colour	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C12)	D-Mercury			
EV_EC3gw_WG_2019-01_NP	EV_EC3gw	WG	N	1/22/2019	12:15	G	5	1		1		1									
EV_EC6gw_WG_2019-01_NP	EV_EC6gw	WG	N	1/22/2019	12:20	G	5	1		1		1									
EV_EC7gw_WG_2019-01_NP	EV_EC7gw	WG	N	1/22/2019	12:25	G	3	1						1							
EV_BALgw_WG_2019-01_NP	EV_BALgw	WG	N	1/22/2019	9:00	G	5	1		1		1									
EV_LSgw_WG_2019-01_NP	EV_LSgw	WG	N	1/22/2019	10:20	G	5	1		1		1									
EV_GCgw_WG_2019-01_NP	EV_GCgw	WG	N	1/22/2019	12:10	G	5	1		1		1									
EV_RCSgw_WG_2019-01_NP	EV_RCSgw	WG	N	1/22/2019	7:30	G	5	1		1		1									
EV_BRgw_WG_2019-01_NP	EV_BRgw	WG	N	1/22/2019	13:15	G	5	1		1		1									
Total							38														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION Kimberley Hackett	DATE/TIME January 22, 2019	ACCEPTED BY/AFFILIATION <i>[Signature]</i>	DATE/TIME 1/23 9:15
--	--	-------------------------------	---	------------------------

NB OF BOTTLES RETURNED/DESCRIPTION Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency < 1 Day, ASAP or Weekend - Contact ALS	Sampler's Name Kimberley Hackett	Mobile #
	Sampler's Signature <i>[Signature]</i>	Date/Time January 22, 2019



7°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 24-JAN-19  
Report Date: 01-FEB-19 16:26 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2224588  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190123Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2224588-1	L2224588-2	L2224588-3	L2224588-4	L2224588-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	23-JAN-19	23-JAN-19	23-JAN-19	23-JAN-19	23-JAN-19
		Sampled Time	12:55	13:00	13:05	12:50	12:50
		Client ID	EV_MC5GW_WG_2019-01_NP	EV_MC6GW_WG_2019-01_NP	EV_MC7GW_WG_2019-01_NP	EV_OCGW_WG_2019-01_NP	EV_OCGW_WG_2019-01_FB-HG
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)		470	<2.0	<2.0	465	
	Hardness (as CaCO3) (mg/L)		163	<0.50		161	
	pH (pH)		8.28	5.39	5.38	8.22	
	ORP (mV)		410	441	416	415	
	Total Suspended Solids (mg/L)		4.8	<1.0	<1.0	4.3	
	Total Dissolved Solids (mg/L)	DLHC	287	<10	<10	302	DLHC
	Turbidity (NTU)		4.82	<0.10	<0.10	4.09	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	1.2	1.1	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		181	<1.0	<1.0	183	
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)		181	<1.0	<1.0	183	
	Ammonia as N (mg/L)		0.107	0.0331	0.0936	0.104	
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050	
	Chloride (Cl) (mg/L)		2.11	<0.50	<0.50	2.09	
	Fluoride (F) (mg/L)		1.21	<0.020	<0.020	1.21	
	Ion Balance (%)		108	0.0	0.0	105	
	Nitrate (as N) (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)		0.196	0.067	0.117	0.162	
	Total Nitrogen (mg/L)		0.196	0.067	0.117	0.162	
	Orthophosphate-Dissolved (as P) (mg/L)		0.0084	<0.0010	<0.0010	0.0085	
	Phosphorus (P)-Total Dissolved (mg/L)		0.0135	<0.0020		0.0143	
	Phosphorus (P)-Total (mg/L)		0.0200	<0.0020	0.0022	0.0223	
	Sulfate (SO4) (mg/L)		68.1	<0.30	<0.30	68.4	
	Anion Sum (meq/L)		5.16	<0.10	<0.10	5.19	
	Cation Sum (meq/L)		5.56	<0.10	<0.10	5.48	
	Cation - Anion Balance (%)		3.7	0.0	0.0	2.7	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.64	<0.50		<0.50	
	Total Organic Carbon (mg/L)		0.64	<0.50	<0.50	0.56	
<b>Total Metals</b>	Mercury (Hg)-Total (ug/L)				<0.00050		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		LAB	LAB		LAB	LAB
	Dissolved Metals Filtration Location		FIELD	FIELD	LAB	FIELD	
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030		<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010		<0.00010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2224588-6 WG 23-JAN-19 14:35 EV_BCGW_WG_2 019-01_NP	L2224588-7 WG 23-JAN-19 15:35 EV_WH50GW_WG _2019-01_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0		
	Conductivity (@ 25C) (uS/cm)	805	629		
	Hardness (as CaCO3) (mg/L)	474	363		
	pH (pH)	7.98	8.15		
	ORP (mV)	432	433		
	Total Suspended Solids (mg/L)	6.9	<1.0		
	Total Dissolved Solids (mg/L)	587 <sup>DLHC</sup>	449 <sup>DLHC</sup>		
	Turbidity (NTU)	1.04	0.84		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.9	1.8		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	191	176		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	191	176		
	Ammonia as N (mg/L)	0.0259	0.0331		
	Bromide (Br) (mg/L)	0.301	0.535		
	Chloride (Cl) (mg/L)	6.14	3.63		
	Fluoride (F) (mg/L)	0.148	0.144		
	Ion Balance (%)	106	105		
	Nitrate (as N) (mg/L)	4.02	2.46		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.247	0.554		
	Total Nitrogen (mg/L)	4.27	3.02		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0039	0.0078		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0038	0.0071		
	Phosphorus (P)-Total (mg/L)	0.0082	0.0118		
	Sulfate (SO4) (mg/L)	234	158		
	Anion Sum (meq/L)	9.15	7.08		
	Cation Sum (meq/L)	9.72	7.46		
	Cation - Anion Balance (%)	3.0	2.6		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.63	<0.50		
	Total Organic Carbon (mg/L)	1.15	<0.50		
<b>Total Metals</b>	Mercury (Hg)-Total (ug/L)				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00018		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2224588-1 WG 23-JAN-19 12:55 EV_MC5GW_WG_ 2019-01_NP	L2224588-2 WG 23-JAN-19 13:00 EV_MC6GW_WG_ 2019-01_NP	L2224588-3 WG 23-JAN-19 13:05 EV_MC7GW_WG_ 2019-01_NP	L2224588-4 WG 23-JAN-19 12:50 EV_OCGW_WG_2 019-01_NP	L2224588-5 WG 23-JAN-19 12:50 EV_OCGW_WG_2 019-01_FB-HG
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Arsenic (As)-Dissolved (mg/L)	0.00138	<0.00010		0.00136
	Barium (Ba)-Dissolved (mg/L)	0.0556	<0.00010		0.0538
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)	0.121	<0.010		0.122
	Cadmium (Cd)-Dissolved (ug/L)	0.0104	<0.0050		0.0088
	Calcium (Ca)-Dissolved (mg/L)	31.9	0.105 <sup>RRV</sup>	<0.050	30.9
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050		<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.258	<0.010		0.252
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0250	<0.0010		0.0250
	Magnesium (Mg)-Dissolved (mg/L)	20.2	<0.10	0.0050	20.4
	Manganese (Mn)-Dissolved (mg/L)	0.0824	<0.00010		0.0811
	Mercury (Hg)-Dissolved (mg/L)				
	Mercury (Hg)-Dissolved (ug/L)	<0.00050	<0.00050		<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.0151	<0.000050		0.0148
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		<0.00050
	Potassium (K)-Dissolved (mg/L)	1.60	<0.050	<0.050	1.58
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050		<0.050
	Silicon (Si)-Dissolved (mg/L)	4.16	<0.050		4.24
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	51.7	<0.050	<0.050	50.7
	Strontium (Sr)-Dissolved (mg/L)	0.442	<0.00020		0.442
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		<0.010
	Uranium (U)-Dissolved (mg/L)	0.00113	<0.000010		0.00115
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0037 <sup>RRV</sup>		<0.0010
<b>Hydrocarbons</b>	EPH10-19 (mg/L)	<0.25	<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)	<0.50	<0.50	<0.50	<0.50
	EPH19-32 (mg/L)	<0.25	<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)	<0.25	<0.25	<0.25	<0.25
	Surrogate: 2-Bromobenzotrifluoride (%)	86.4	84.4	85.9	87.7

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2224588-6 WG 23-JAN-19 14:35 EV_BCGW_WG_2 019-01_NP	L2224588-7 WG 23-JAN-19 15:35 EV_WH50GW_WG _2019-01_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Arsenic (As)-Dissolved (mg/L)	0.00012	0.00012		
	Barium (Ba)-Dissolved (mg/L)	0.0400	0.126		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.016	0.011		
	Cadmium (Cd)-Dissolved (ug/L)	0.0431	0.0327		
	Calcium (Ca)-Dissolved (mg/L)	112	86.9		
	Chromium (Cr)-Dissolved (mg/L)	0.00013	0.00013		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050		
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.017		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0256	0.0154		
	Magnesium (Mg)-Dissolved (mg/L)	47.0	35.5		
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00203		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000941	0.00138		
	Nickel (Ni)-Dissolved (mg/L)	0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	1.23	1.10		
	Selenium (Se)-Dissolved (ug/L)	24.9	16.2		
	Silicon (Si)-Dissolved (mg/L)	2.78	2.19		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	5.02	4.10		
	Strontium (Sr)-Dissolved (mg/L)	0.222	0.208		
	Thallium (Tl)-Dissolved (mg/L)	0.000013	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00148	0.00186		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	0.0016	0.0011		
<b>Hydrocarbons</b>	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2224588-3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2224588-3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2224588-1, -2, -4, -6, -7

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>EPH(10-32)-CALC-CL</b>	Water	Sum of EPH (10-32)	Sum of EPH - Auto Calculated
The sum of EPH(C10-C19) and EPH(C19-C32)			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-D-U-CVAF-VA</b>	Water	Diss. Mercury in Water by CVAFS (Ultra)	APHA 3030 B / EPA 1631 REV. E
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
<b>HG-T-U-CVAF-VA</b>	Water	Total Mercury in Water by CVAFS (Ultra)	EPA 1631 REV. E
This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-CL</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			

## Reference Information

It is recommended that this analysis be conducted in the field.

<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TEH-BC-VA-CL</b>	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
<b>TEH-WATER-VA-CL</b>	Water	TEH (C10-C30)	EPA 3510/8000-GC-FID
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190123Q1GW

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 1 of 13

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4480808							
<b>WG2980590-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	31-JAN-19
<b>WG2980590-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	31-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4477672							
<b>WG2979616-9</b>	<b>DUP</b>	<b>L2224588-1</b>						
Alkalinity, Total (as CaCO3)		181	180		mg/L	0.6	20	30-JAN-19
<b>WG2979616-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	30-JAN-19
<b>WG2979616-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4475957							
<b>WG2977444-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			90.9		%		80-120	29-JAN-19
<b>WG2977444-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4467957							
<b>WG2976931-10</b>	<b>LCS</b>							
Bromide (Br)			102.4		%		85-115	24-JAN-19
<b>WG2976931-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	24-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4473891							
<b>WG2978832-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.0		%		80-120	28-JAN-19
<b>WG2978832-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
Batch	R4474012							
<b>WG2978867-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch	R4473891							
<b>WG2978832-2</b>	<b>LCS</b>							
Total Organic Carbon			98.5		%		80-120	28-JAN-19
<b>WG2978832-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
Batch	R4474012							
<b>WG2978867-7</b>	<b>DUP</b>	<b>L2224588-3</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	28-JAN-19
<b>WG2978867-6</b>	<b>LCS</b>							
Total Organic Carbon			100.8		%		80-120	28-JAN-19
<b>WG2978867-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
<b>WG2978867-8</b>	<b>MS</b>	<b>L2224588-3</b>						
Total Organic Carbon			98.5		%		70-130	28-JAN-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch	R4467957							
<b>WG2976931-10</b>	<b>LCS</b>							
Chloride (Cl)			98.5		%		90-110	24-JAN-19
<b>WG2976931-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-JAN-19
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
Batch	R4465871							
<b>WG2976309-2</b>	<b>LCS</b>							
Colour, True			105.3		%		85-115	24-JAN-19
<b>WG2976309-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	24-JAN-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4477672							
<b>WG2979616-9</b>	<b>DUP</b>	<b>L2224588-1</b>						
Conductivity (@ 25C)		470	475		uS/cm	1.1	10	30-JAN-19
<b>WG2979616-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4467957							
<b>WG2976931-10</b>	<b>LCS</b>							
Fluoride (F)			102.4		%		90-110	24-JAN-19
<b>WG2976931-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-JAN-19







## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4469926</b>							
<b>WG2977513-1</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
<b>WG2977513-5</b>	<b>MB</b>							
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
<b>WG2977513-4</b>	<b>MS</b>	<b>L2224588-3</b>						
Calcium (Ca)-Dissolved			103.8		%		70-130	25-JAN-19
Magnesium (Mg)-Dissolved			97.5		%		70-130	25-JAN-19
Potassium (K)-Dissolved			96.7		%		70-130	25-JAN-19
Sodium (Na)-Dissolved			102.6		%		70-130	25-JAN-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4475957</b>							
<b>WG2977444-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.6		%		80-120	29-JAN-19
Antimony (Sb)-Dissolved			96.0		%		80-120	29-JAN-19
Arsenic (As)-Dissolved			87.1		%		80-120	29-JAN-19
Barium (Ba)-Dissolved			92.6		%		80-120	29-JAN-19
Bismuth (Bi)-Dissolved			100.8		%		80-120	29-JAN-19
Boron (B)-Dissolved			91.2		%		80-120	29-JAN-19
Cadmium (Cd)-Dissolved			96.6		%		80-120	29-JAN-19
Calcium (Ca)-Dissolved			90.8		%		80-120	29-JAN-19
Chromium (Cr)-Dissolved			96.5		%		80-120	29-JAN-19
Cobalt (Co)-Dissolved			95.3		%		80-120	29-JAN-19
Copper (Cu)-Dissolved			93.9		%		80-120	29-JAN-19
Iron (Fe)-Dissolved			82.3		%		80-120	29-JAN-19
Lead (Pb)-Dissolved			92.9		%		80-120	29-JAN-19
Lithium (Li)-Dissolved			88.6		%		80-120	29-JAN-19
Magnesium (Mg)-Dissolved			95.1		%		80-120	29-JAN-19
Manganese (Mn)-Dissolved			92.7		%		80-120	29-JAN-19
Molybdenum (Mo)-Dissolved			97.6		%		80-120	29-JAN-19
Nickel (Ni)-Dissolved			94.3		%		80-120	29-JAN-19



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4475957</b>							
<b>WG2977444-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			91.1		%		80-120	29-JAN-19
Selenium (Se)-Dissolved			93.7		%		80-120	29-JAN-19
Silicon (Si)-Dissolved			98.1		%		60-140	29-JAN-19
Silver (Ag)-Dissolved			94.7		%		80-120	29-JAN-19
Sodium (Na)-Dissolved			106.4		%		80-120	29-JAN-19
Strontium (Sr)-Dissolved			94.4		%		80-120	29-JAN-19
Thallium (Tl)-Dissolved			93.1		%		80-120	29-JAN-19
Tin (Sn)-Dissolved			94.7		%		80-120	29-JAN-19
Titanium (Ti)-Dissolved			93.4		%		80-120	29-JAN-19
Uranium (U)-Dissolved			92.7		%		80-120	29-JAN-19
Vanadium (V)-Dissolved			95.9		%		80-120	29-JAN-19
Zinc (Zn)-Dissolved			86.0		%		80-120	29-JAN-19
<b>WG2977444-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-JAN-19



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4475957</b>							
<b>WG2977444-1</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
<b>Batch</b>	<b>R4476887</b>							
<b>WG2979586-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.8		%		80-120	30-JAN-19
Antimony (Sb)-Dissolved			92.7		%		80-120	30-JAN-19
Arsenic (As)-Dissolved			94.7		%		80-120	30-JAN-19
Barium (Ba)-Dissolved			95.3		%		80-120	30-JAN-19
Bismuth (Bi)-Dissolved			96.7		%		80-120	30-JAN-19
Boron (B)-Dissolved			94.1		%		80-120	30-JAN-19
Cadmium (Cd)-Dissolved			94.5		%		80-120	30-JAN-19
Calcium (Ca)-Dissolved			95.6		%		80-120	30-JAN-19
Chromium (Cr)-Dissolved			100.4		%		80-120	30-JAN-19
Cobalt (Co)-Dissolved			96.1		%		80-120	30-JAN-19
Copper (Cu)-Dissolved			92.7		%		80-120	30-JAN-19
Iron (Fe)-Dissolved			94.0		%		80-120	30-JAN-19
Lead (Pb)-Dissolved			94.8		%		80-120	30-JAN-19
Lithium (Li)-Dissolved			92.3		%		80-120	30-JAN-19
Magnesium (Mg)-Dissolved			101.9		%		80-120	30-JAN-19
Manganese (Mn)-Dissolved			97.4		%		80-120	30-JAN-19
Molybdenum (Mo)-Dissolved			97.8		%		80-120	30-JAN-19
Nickel (Ni)-Dissolved			95.8		%		80-120	30-JAN-19
Potassium (K)-Dissolved			93.5		%		80-120	30-JAN-19
Selenium (Se)-Dissolved			99.5		%		80-120	30-JAN-19
Silicon (Si)-Dissolved			101.6		%		60-140	30-JAN-19
Silver (Ag)-Dissolved			92.5		%		80-120	30-JAN-19
Sodium (Na)-Dissolved			99.0		%		80-120	30-JAN-19



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4476887</b>							
<b>WG2979586-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			94.5		%		80-120	30-JAN-19
Thallium (Tl)-Dissolved			95.7		%		80-120	30-JAN-19
Tin (Sn)-Dissolved			95.0		%		80-120	30-JAN-19
Titanium (Ti)-Dissolved			95.8		%		80-120	30-JAN-19
Uranium (U)-Dissolved			95.0		%		80-120	30-JAN-19
Vanadium (V)-Dissolved			97.2		%		80-120	30-JAN-19
Zinc (Zn)-Dissolved			102.6		%		80-120	30-JAN-19
<b>WG2979586-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-JAN-19



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4476887</b>							
<b>WG2979586-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-JAN-19
<b>WG2979586-4</b>	<b>MS</b>	<b>L2224588-2</b>						
Aluminum (Al)-Dissolved			98.3		%		70-130	30-JAN-19
Antimony (Sb)-Dissolved			93.9		%		70-130	30-JAN-19
Arsenic (As)-Dissolved			97.8		%		70-130	30-JAN-19
Barium (Ba)-Dissolved			94.4		%		70-130	30-JAN-19
Bismuth (Bi)-Dissolved			98.8		%		70-130	30-JAN-19
Boron (B)-Dissolved			99.4		%		70-130	30-JAN-19
Cadmium (Cd)-Dissolved			98.7		%		70-130	30-JAN-19
Calcium (Ca)-Dissolved			94.1		%		70-130	30-JAN-19
Chromium (Cr)-Dissolved			101.8		%		70-130	30-JAN-19
Cobalt (Co)-Dissolved			98.4		%		70-130	30-JAN-19
Copper (Cu)-Dissolved			97.1		%		70-130	30-JAN-19
Iron (Fe)-Dissolved			98.1		%		70-130	30-JAN-19
Lead (Pb)-Dissolved			98.4		%		70-130	30-JAN-19
Lithium (Li)-Dissolved			97.8		%		70-130	30-JAN-19
Magnesium (Mg)-Dissolved			97.9		%		70-130	30-JAN-19
Manganese (Mn)-Dissolved			98.5		%		70-130	30-JAN-19
Molybdenum (Mo)-Dissolved			97.0		%		70-130	30-JAN-19
Nickel (Ni)-Dissolved			98.3		%		70-130	30-JAN-19
Potassium (K)-Dissolved			100.4		%		70-130	30-JAN-19
Selenium (Se)-Dissolved			105.3		%		70-130	30-JAN-19
Silicon (Si)-Dissolved			97.9		%		70-130	30-JAN-19
Silver (Ag)-Dissolved			99.0		%		70-130	30-JAN-19
Sodium (Na)-Dissolved			102.8		%		70-130	30-JAN-19
Strontium (Sr)-Dissolved			101.0		%		70-130	30-JAN-19
Thallium (Tl)-Dissolved			98.0		%		70-130	30-JAN-19
Tin (Sn)-Dissolved			95.8		%		70-130	30-JAN-19
Titanium (Ti)-Dissolved			96.0		%		70-130	30-JAN-19
Uranium (U)-Dissolved			98.6		%		70-130	30-JAN-19
Vanadium (V)-Dissolved			96.9		%		70-130	30-JAN-19



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch R4476887								
<b>WG2979586-4 MS</b>		<b>L2224588-2</b>						
Zinc (Zn)-Dissolved			106.1		%		70-130	30-JAN-19
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch R4483429								
<b>WG2981722-2 LCS</b>								
Ammonia as N			111.9		%		85-115	01-FEB-19
<b>WG2981722-1 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	01-FEB-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch R4467957								
<b>WG2976931-10 LCS</b>								
Nitrite (as N)			104.2		%		90-110	24-JAN-19
<b>WG2976931-9 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	24-JAN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch R4467957								
<b>WG2976931-10 LCS</b>								
Nitrate (as N)			99.4		%		90-110	24-JAN-19
<b>WG2976931-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	24-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch R4472149								
<b>WG2978334-3 CRM</b>		<b>CL-ORP</b>						
ORP			221		mV		210-230	28-JAN-19
<b>WG2978334-5 CRM</b>		<b>CL-ORP</b>						
ORP			222		mV		210-230	28-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R4480827								
<b>WG2980929-2 LCS</b>								
Phosphorus (P)-Total			103.3		%		80-120	31-JAN-19
<b>WG2980929-1 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-JAN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R4480827							
<b>WG2980929-2</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		103.3		%		80-120	31-JAN-19
<b>WG2980929-1</b>	<b>MB</b>							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	31-JAN-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4477672							
<b>WG2979616-9</b>	<b>DUP</b>	<b>L2224588-1</b>						
pH		8.28	8.27	J	pH	0.01	0.2	30-JAN-19
<b>WG2979616-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	30-JAN-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4467047							
<b>WG2976256-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			106.1		%		80-120	24-JAN-19
<b>WG2976256-17</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4467957							
<b>WG2976931-10</b>	<b>LCS</b>							
Sulfate (SO4)			99.1		%		90-110	24-JAN-19
<b>WG2976931-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	24-JAN-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4477007							
<b>WG2978859-6</b>	<b>DUP</b>	<b>L2224588-1</b>						
Total Dissolved Solids		287	279		mg/L	2.8	20	29-JAN-19
<b>WG2978859-5</b>	<b>LCS</b>							
Total Dissolved Solids			104.4		%		85-115	29-JAN-19
<b>WG2978859-8</b>	<b>LCS</b>							
Total Dissolved Solids			101.5		%		85-115	29-JAN-19
<b>WG2978859-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-JAN-19
<b>WG2978859-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-JAN-19
<b>TEH-BC-VA-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TEH-BC-VA-CL</b> <b>Water</b>								
Batch	R4471449							
<b>WG2976233-2</b>	<b>LCS</b>							
EPH10-19			104.9		%		50-150	25-JAN-19
EPH19-32			101.7		%		50-150	25-JAN-19
<b>WG2976233-1</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	25-JAN-19
EPH19-32			<0.25		mg/L		0.25	25-JAN-19
Surrogate: 2-Bromobenzotrifluoride			88.6		%		50-150	25-JAN-19
<b>TEH-WATER-VA-CL</b> <b>Water</b>								
Batch	R4471449							
<b>WG2976233-2</b>	<b>LCS</b>							
TEH (C10-C30)			103.8		%		50-150	25-JAN-19
<b>WG2976233-1</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	25-JAN-19
Surrogate: 2-Bromobenzotrifluoride			88.6		%		50-150	25-JAN-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4477216							
<b>WG2978307-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.8		%		75-125	29-JAN-19
<b>WG2978307-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-JAN-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4476988							
<b>WG2978815-8</b>	<b>LCS</b>							
Total Suspended Solids			96.9		%		85-115	29-JAN-19
<b>WG2978815-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-JAN-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R4469547							
<b>WG2977363-9</b>	<b>DUP</b>	<b>L2224588-1</b>						
Turbidity		4.82	4.80		NTU	0.4	15	25-JAN-19
<b>WG2977363-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	25-JAN-19
<b>WG2977363-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-JAN-19



# Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2224588

Report Date: 01-FEB-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	23-JAN-19 12:55	28-JAN-19 10:00	0.25	117	hours	EHTR-FM
	2	23-JAN-19 13:00	28-JAN-19 10:00	0.25	117	hours	EHTR-FM
	3	23-JAN-19 13:05	28-JAN-19 10:00	0.25	117	hours	EHTR-FM
	4	23-JAN-19 12:50	28-JAN-19 10:00	0.25	117	hours	EHTR-FM
	6	23-JAN-19 14:35	28-JAN-19 10:00	0.25	115	hours	EHTR-FM
	7	23-JAN-19 15:35	28-JAN-19 10:00	0.25	114	hours	EHTR-FM
pH							
	1	23-JAN-19 12:55	30-JAN-19 09:00	0.25	164	hours	EHTR-FM
	2	23-JAN-19 13:00	30-JAN-19 09:00	0.25	164	hours	EHTR-FM
	3	23-JAN-19 13:05	30-JAN-19 09:00	0.25	164	hours	EHTR-FM
	4	23-JAN-19 12:50	30-JAN-19 09:00	0.25	164	hours	EHTR-FM
	6	23-JAN-19 14:35	30-JAN-19 09:00	0.25	162	hours	EHTR-FM
	7	23-JAN-19 15:35	30-JAN-19 09:00	0.25	162	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2224588 were received on 24-JAN-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

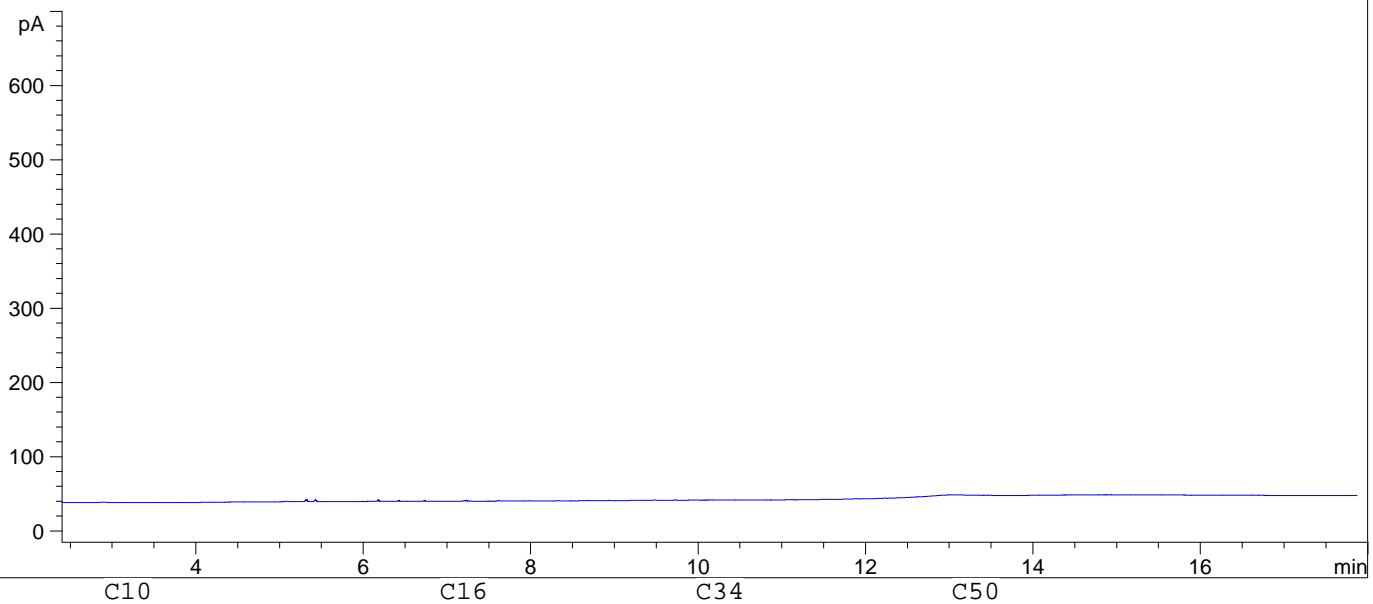
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

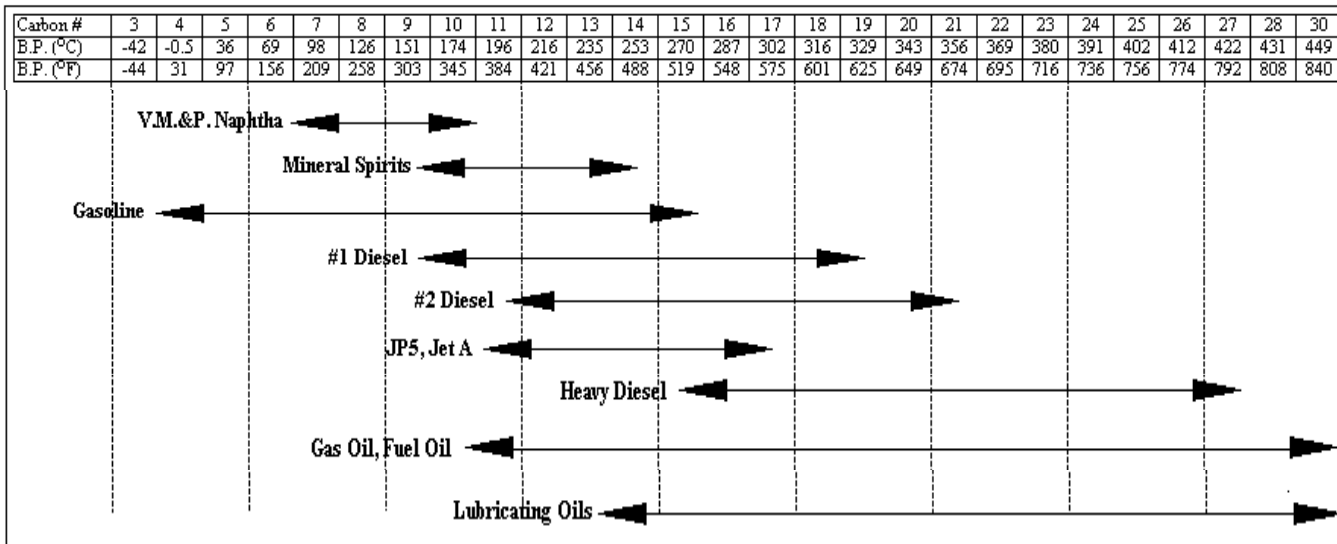


Sample ID: L2224588-1 V4  
 Injection Date: 1/25/2019  
 Injection Time: 10:07:55 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190125\_SE\_DA\_TI\_SIG2000012.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



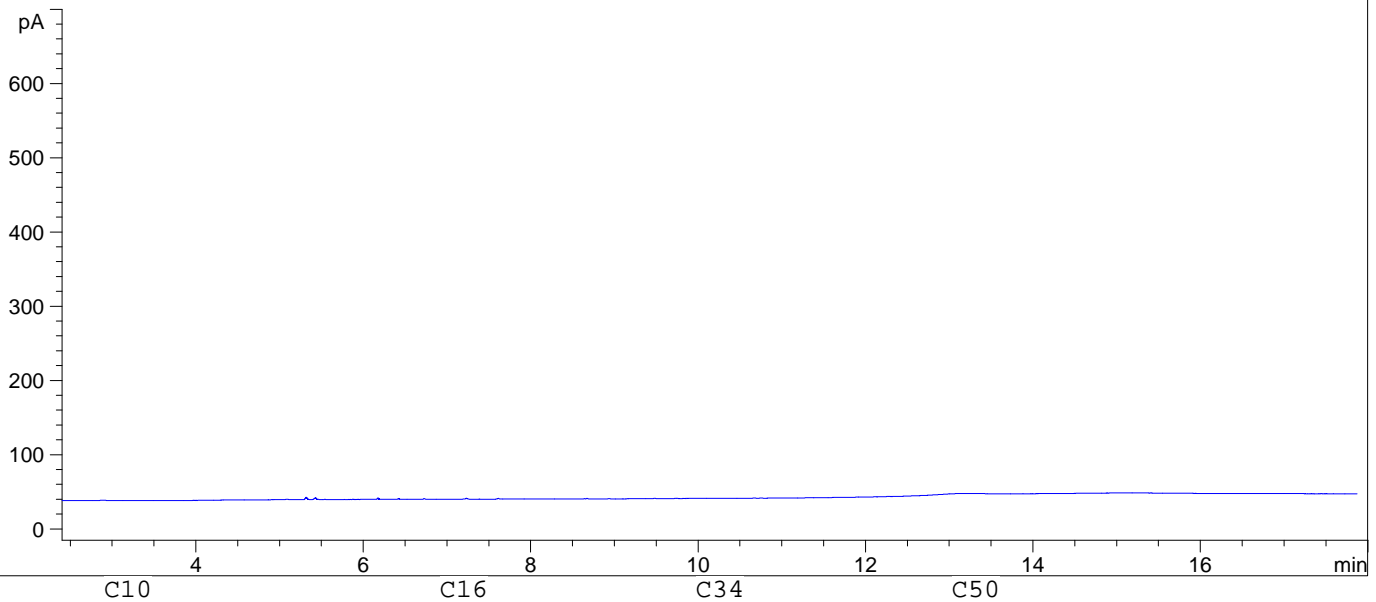
Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

=====  
 Error 41276 occurred in Command IF in macro PeakSumRpt  
 at line 366 in file C:\CHEM32\CORE\REPORT.MCX:  
 Undefined symbol: RPT\_PSRecalcNeeded  
 =====

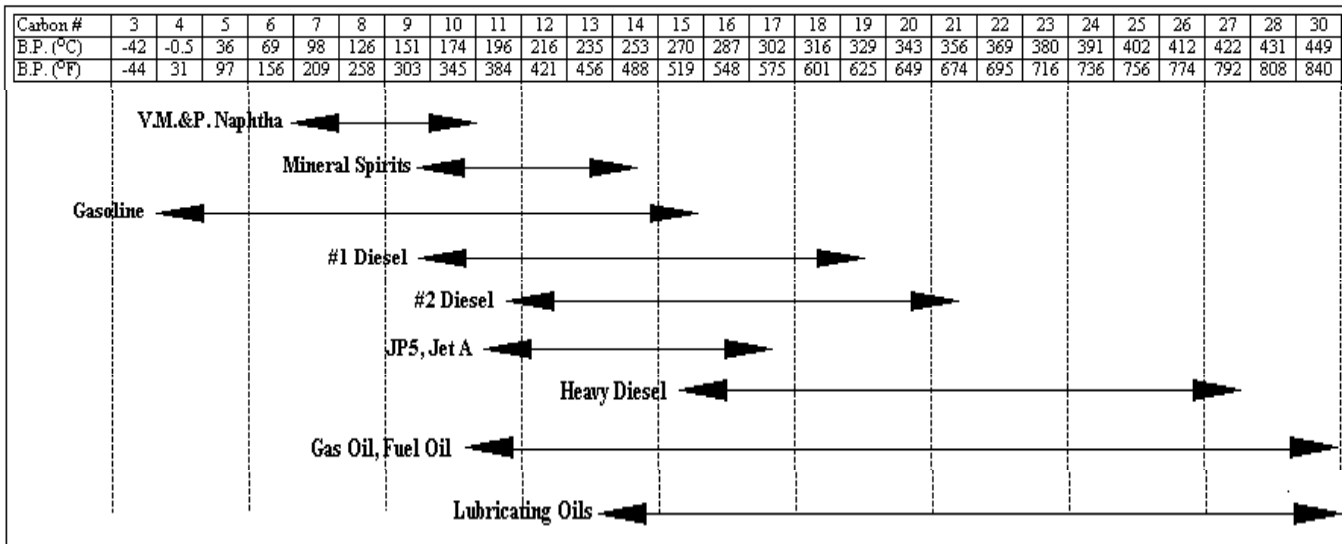


Sample ID: L2224588-2 V4  
 Injection Date: 1/25/2019  
 Injection Time: 10:39:03 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190125\_SE\_DA\_TI\_SIG2000013.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



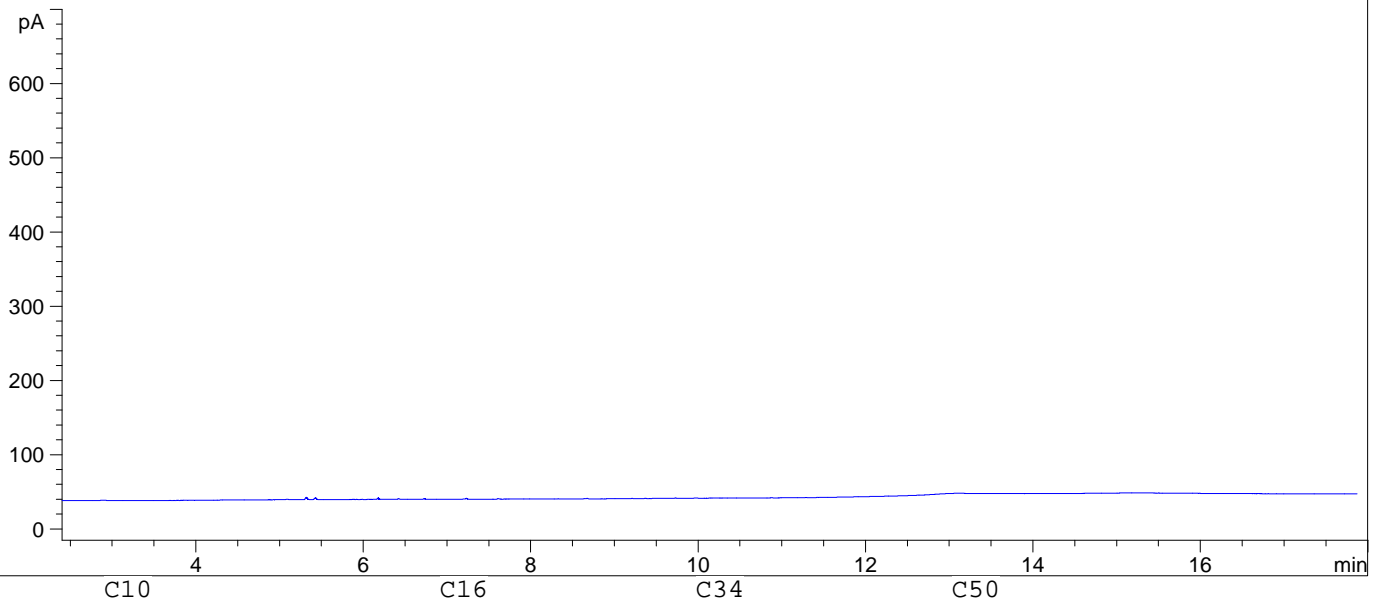
Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

=====  
 Error 41276 occurred in Command IF in macro PeakSumRpt  
 at line 366 in file C:\CHEM32\CORE\REPORT.MCX:  
 Undefined symbol: RPT\_PSRecalcNeeded  
 =====

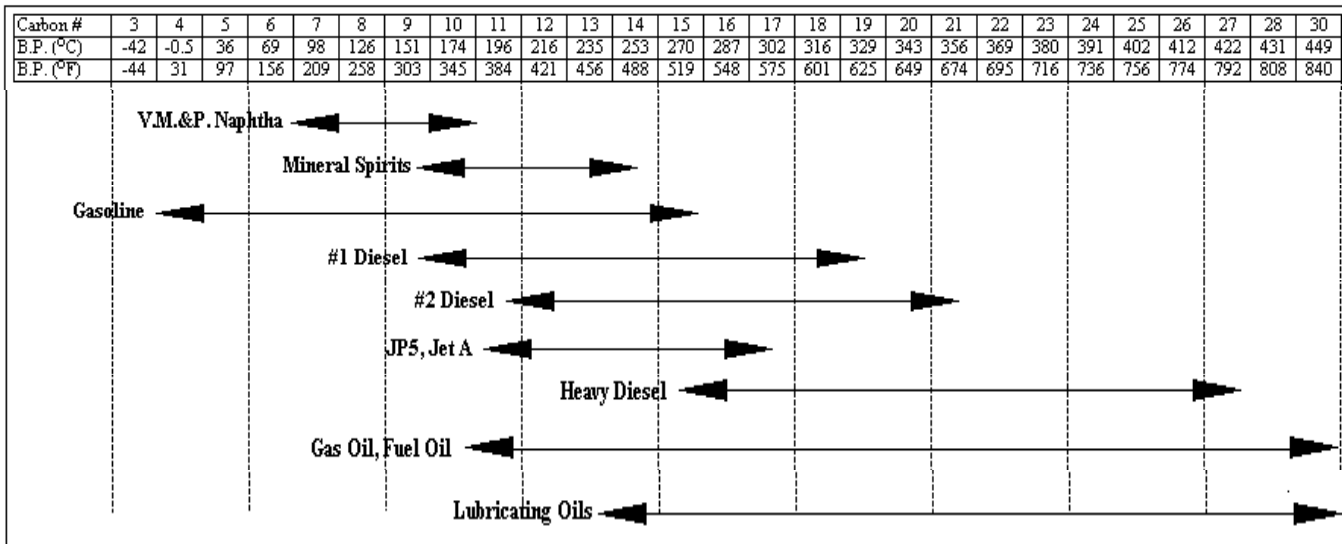


Sample ID: L2224588-3 V4  
 Injection Date: 1/25/2019  
 Injection Time: 11:09:59 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190125\_SE\_DA\_TI\_SIG2000014.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



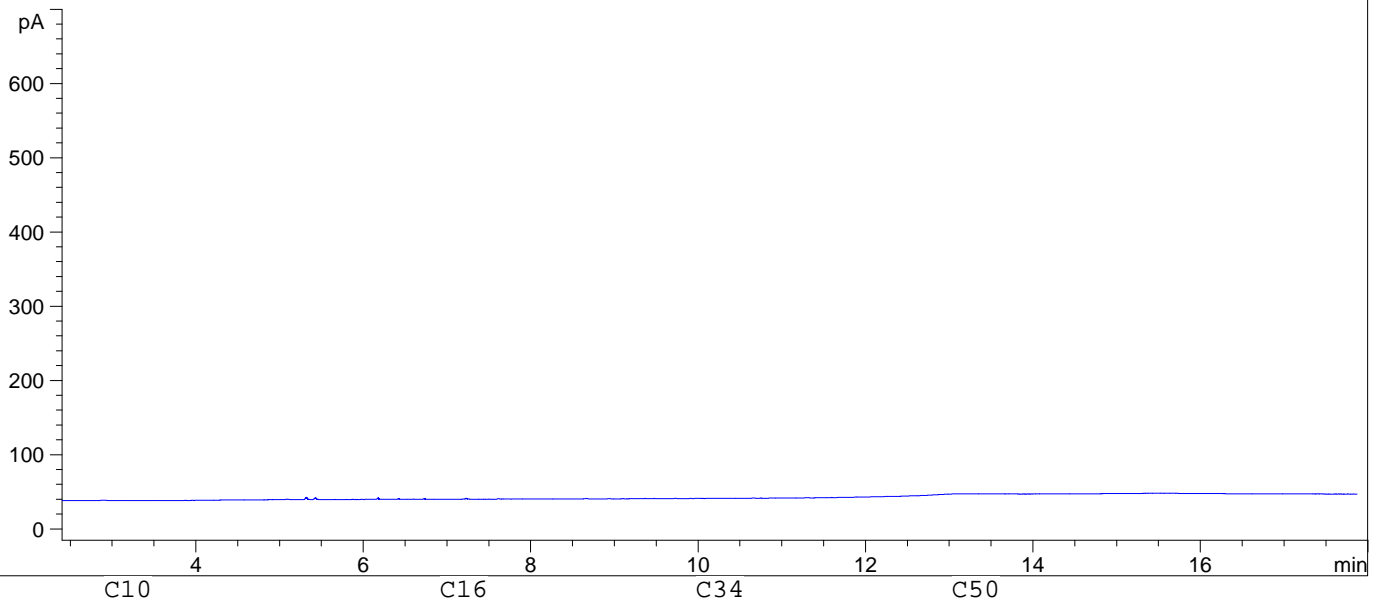
Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

=====  
 Error 41276 occurred in Command IF in macro PeakSumRpt  
 at line 366 in file C:\CHEM32\CORE\REPORT.MCX:  
 Undefined symbol: RPT\_PSRecalcNeeded  
 =====

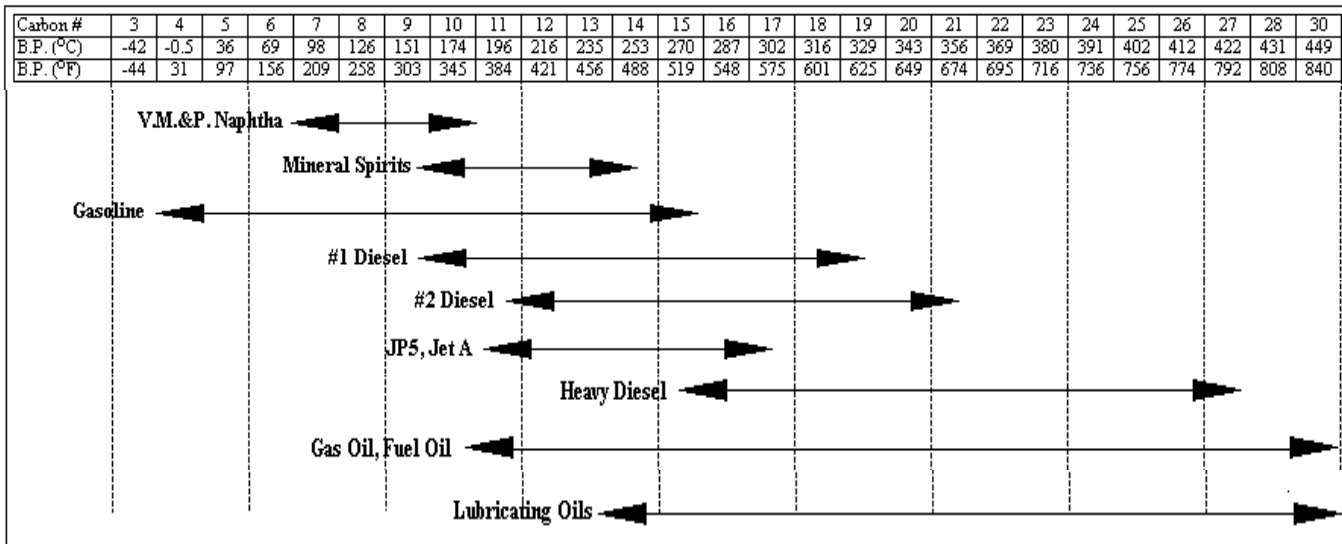


Sample ID: L2224588-4 V4  
 Injection Date: 1/25/2019  
 Injection Time: 11:41:01 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190125\_SE\_DA\_TI\_SIG2000015.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

=====  
 Error 41276 occurred in Command IF in macro PeakSumRpt  
 at line 366 in file C:\CHEM32\CORE\REPORT.MCX:  
 Undefined symbol: RPT\_PSRecalcNeeded  
 =====

# Teck

COC ID: 2019U123Q1GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	Bryan.Ordem@teck.com		Y	Y	Y
Project Manager	Cameron Griffin			Email	Lyudmyla.Shvets@ahglab.com			Email 2:	teckcoal@egulsonline.com		Y	Y	Y
Email	Cameron.Griffin@teck.com			Address	2559 29 St NE,			Email 3:	kimberley.hackett@teck.com		Y	Y	Y
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@teck.com		Y	Y	Y
								Email 5:	tecklab.results@egulsonline.com		Y	Y	Y
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VJ-006610852				
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897								

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	ANALYSIS REQUESTED	ANALYSIS REQUESTED											
									Filtered	No	No	Yes	Yes	Yes	No	No	No	No	No	Yes
								TECKCOAL-ROUTINE: VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury		
EV_MC5gw_WG_2019-01_NP	EV_MC5gw	WG	N	1/23/2019	12:55	G	7		1	1	1		1			1	2			
EV_MC6gw_WG_2019-01_NP	EV_MC6gw	WG	N	1/23/2019	13:00	G	7		1	1	1		1			1	2			
EV_MC7gw_WG_2019-01_NP	EV_MC7gw	WG	N	1/23/2019	13:05	G	5		1				1		1		2			
EV_OCgw_WG_2019-01_NP	EV_OCgw	WG	N	1/23/2019	12:50	G	7		1	1	1		1			1	2			
EV_OCgw_WG_2019-01_PN-HIG	EV_OCgw	WG	N	1/23/2019	12:50	G	1									1				
EV_BCgw_WG_2019-01_NP	EV_BCgw	WG	N	1/23/2019	14:35	G	5		1	1	1		1					1		
EV_WH50gw_WG_2019-01_NP	EV_WH50gw	WG	N	1/23/2019	15:35	G	5		1	1	1		1					1		
Total							37													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	January 23, 2019	<i>[Signature]</i>	1/29 9:30

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	January 23, 2019



L2224588-COFC

58

5



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 31-JAN-19  
Report Date: 11-FEB-19 17:27 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2227330  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190130Q1GW  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2227330-1	L2227330-2	L2227330-3	L2227330-4
		Description	WG	WG	WG	WG
		Sampled Date	30-JAN-19	30-JAN-19	30-JAN-19	30-JAN-19
		Sampled Time	13:35	13:35	15:30	15:30
		Client ID	EV_MCGWS_WG_2019-01_NP	EV_MCGWS_WG_2019-01_FB-HG	EV_MCGWD_WG_2019-01_NP	EV_MCGWD_WG_2019-01_FB-HG
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	7.7	RRV		<5.0	
	Conductivity (@ 25C) (uS/cm)	848			557	
	Hardness (as CaCO3) (mg/L)	357			232	
	pH (pH)	8.10			8.10	
	ORP (mV)	413			403	
	Total Suspended Solids (mg/L)	7.5			519	
	Total Dissolved Solids (mg/L)	546	DLHC		443	DLHC
	Turbidity (NTU)	24.8			829	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.7			7.1	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	260			298	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	260			298	
	Ammonia as N (mg/L)	0.181			0.130	
	Bromide (Br) (mg/L)	<0.25	DLHC		<0.050	
	Chloride (Cl) (mg/L)	32.4	DLHC		3.71	
	Fluoride (F) (mg/L)	0.48	DLHC		1.00	
	Ion Balance (%)	98.5			79.2	
	Nitrate (as N) (mg/L)	<0.025	DLHC		0.0959	
	Nitrite (as N) (mg/L)	<0.0050	DLHC		0.0019	
	Total Kjeldahl Nitrogen (mg/L)	0.211			0.73	DLM
	Total Nitrogen (mg/L)	0.211			0.83	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			0.0071	RRV
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			0.0078	DLM
	Phosphorus (P)-Total (mg/L)	<0.0020			0.850	DLHC
	Sulfate (SO4) (mg/L)	168	DLHC		66.8	
	Anion Sum (meq/L)	9.63			7.51	
	Cation Sum (meq/L)	9.48			5.95	
Cation - Anion Balance (%)	-0.8			-11.6		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.69			1.48	
	Total Organic Carbon (mg/L)	1.51			1.55	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB		LAB	LAB	LAB
	Dissolved Metals Filtration Location	FIELD			FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			0.00012	
	Arsenic (As)-Dissolved (mg/L)	0.00101			0.00048	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2227330-1	L2227330-2	L2227330-3	L2227330-4
					L2227330-1 WG 30-JAN-19 13:35 EV_MCGWS_WG_ 2019-01_NP	L2227330-2 WG 30-JAN-19 13:35 EV_MCGWS_WG_ 2019-01_FB-HG	L2227330-3 WG 30-JAN-19 15:30 EV_MCGWD_WG_ 2019-01_NP	L2227330-4 WG 30-JAN-19 15:30 EV_MCGWD_WG_ 2019-01_FB-HG
Grouping	Analyte							
<b>WATER</b>								
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)				0.0279		0.0725	
	Beryllium (Be)-Dissolved (ug/L)				<0.020		<0.020	
	Bismuth (Bi)-Dissolved (mg/L)				<0.000050		<0.000050	
	Boron (B)-Dissolved (mg/L)				0.030		0.074	
	Cadmium (Cd)-Dissolved (ug/L)				<0.0050		0.0677	
	Calcium (Ca)-Dissolved (mg/L)				88.2		49.7	
	Chromium (Cr)-Dissolved (mg/L)				<0.00010		0.00012	
	Cobalt (Co)-Dissolved (ug/L)				0.17		0.38	
	Copper (Cu)-Dissolved (mg/L)				<0.00050		0.00121	
	Iron (Fe)-Dissolved (mg/L)				1.63		0.061	
	Lead (Pb)-Dissolved (mg/L)				<0.000050		<0.000050	
	Lithium (Li)-Dissolved (mg/L)				0.0229		0.0084	
	Magnesium (Mg)-Dissolved (mg/L)				33.2		26.2	
	Manganese (Mn)-Dissolved (mg/L)				0.141		0.214	
	Mercury (Hg)-Dissolved (ug/L)				<0.00050	<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)				0.00338		0.0147	
	Nickel (Ni)-Dissolved (mg/L)				<0.00050		0.00472	
	Potassium (K)-Dissolved (mg/L)				1.79		1.51	
	Selenium (Se)-Dissolved (ug/L)				0.214		0.129	
	Silicon (Si)-Dissolved (mg/L)				5.40		4.77	
	Silver (Ag)-Dissolved (mg/L)				<0.000010		<0.000010	
	Sodium (Na)-Dissolved (mg/L)				50.6		28.7	
	Strontium (Sr)-Dissolved (mg/L)				0.315		0.478	
	Thallium (Tl)-Dissolved (mg/L)				<0.000010		0.000076	
	Tin (Sn)-Dissolved (mg/L)				<0.00010		<0.00010	
	Titanium (Ti)-Dissolved (mg/L)				<0.010		<0.010	
	Uranium (U)-Dissolved (mg/L)				0.00231		0.00278	
	Vanadium (V)-Dissolved (mg/L)				<0.00050		<0.00050	
	Zinc (Zn)-Dissolved (mg/L)				<0.0010		0.0084	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2227330-1, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2227330-1, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2227330-1, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2227330-1, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2227330-1, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2227330-1, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190130Q1GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 1 of 11

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4494876</b>							
<b>WG2984939-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	07-FEB-19
<b>WG2984939-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4493632</b>							
<b>WG2984145-12</b>	<b>DUP</b>	<b>L2227330-1</b>						
Alkalinity, Total (as CaCO3)		260	251		mg/L	3.5	20	06-FEB-19
<b>WG2984145-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	06-FEB-19
<b>WG2984145-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4499927</b>							
<b>WG2985900-3</b>	<b>DUP</b>	<b>L2227330-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	08-FEB-19
<b>WG2985900-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.8		%		80-120	08-FEB-19
<b>WG2985900-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-FEB-19
<b>WG2985900-4</b>	<b>MS</b>	<b>L2227330-3</b>						
Beryllium (Be)-Dissolved			97.0		%		70-130	08-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4482738</b>							
<b>WG2981551-14</b>	<b>LCS</b>							
Bromide (Br)			100.0		%		85-115	31-JAN-19
<b>WG2981551-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4489328</b>							
<b>WG2983533-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.4		%		80-120	04-FEB-19
<b>WG2983533-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-FEB-19
<b>WG2983533-4</b>	<b>MS</b>	<b>L2227330-1</b>						
Dissolved Organic Carbon			110.1		%		70-130	04-FEB-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch R4489328								
<b>WG2983533-2</b>	<b>LCS</b>							
Total Organic Carbon			109.7		%		80-120	04-FEB-19
<b>WG2983533-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-FEB-19
<b>WG2983533-4</b>	<b>MS</b>	<b>L2227330-1</b>						
Total Organic Carbon			117.4		%		70-130	04-FEB-19
<b>CL-IC-N-CL</b>								
Batch R4482738								
<b>WG2981551-14</b>	<b>LCS</b>							
Chloride (Cl)			99.2		%		90-110	31-JAN-19
<b>WG2981551-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-JAN-19
<b>COLOUR-TRUE-CL</b>								
Batch R4481070								
<b>WG2980972-3</b>	<b>DUP</b>	<b>L2227330-3</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	31-JAN-19
<b>WG2980972-2</b>	<b>LCS</b>							
Colour, True			101.2		%		85-115	31-JAN-19
<b>WG2980972-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	31-JAN-19
<b>EC-L-PCT-CL</b>								
Batch R4493632								
<b>WG2984145-12</b>	<b>DUP</b>	<b>L2227330-1</b>						
Conductivity (@ 25C)		848	847		uS/cm	0.1	10	06-FEB-19
<b>WG2984145-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.8		%		90-110	06-FEB-19
<b>WG2984145-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-FEB-19
<b>F-IC-N-CL</b>								
Batch R4482738								
<b>WG2981551-14</b>	<b>LCS</b>							
Fluoride (F)			102.2		%		90-110	31-JAN-19
<b>WG2981551-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	31-JAN-19
<b>HG-D-U-CVAF-VA</b>								
Matrix Water								



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4494933</b>							
<b>WG2983908-3</b>	<b>DUP</b>	<b>L2227330-2</b>						
Mercury (Hg)-Dissolved		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	07-FEB-19
<b>WG2983908-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.8		%		80-120	07-FEB-19
<b>WG2985035-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.8		%		80-120	07-FEB-19
<b>WG2983908-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	07-FEB-19
<b>WG2985035-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	07-FEB-19
<b>WG2983908-4</b>	<b>MS</b>	<b>L2227330-1</b>						
Mercury (Hg)-Dissolved			88.5		%		70-130	07-FEB-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4499927</b>							
<b>WG2985900-3</b>	<b>DUP</b>	<b>L2227330-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	08-FEB-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-19
Arsenic (As)-Dissolved		0.00101	0.00103		mg/L	2.2	20	08-FEB-19
Barium (Ba)-Dissolved		0.0279	0.0274		mg/L	1.6	20	08-FEB-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-FEB-19
Boron (B)-Dissolved		0.030	0.030		mg/L	1.8	20	08-FEB-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	08-FEB-19
Calcium (Ca)-Dissolved		88.2	91.1		mg/L	3.3	20	08-FEB-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-19
Cobalt (Co)-Dissolved		0.00017	0.00018		mg/L	5.8	20	08-FEB-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-FEB-19
Iron (Fe)-Dissolved		1.63	1.62		mg/L	0.8	20	08-FEB-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	08-FEB-19
Lithium (Li)-Dissolved		0.0229	0.0233		mg/L	1.7	20	08-FEB-19
Magnesium (Mg)-Dissolved		33.2	32.4		mg/L	2.4	20	08-FEB-19
Manganese (Mn)-Dissolved		0.141	0.138		mg/L	2.0	20	08-FEB-19
Molybdenum (Mo)-Dissolved		0.00338	0.00355		mg/L	5.0	20	08-FEB-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-FEB-19
Potassium (K)-Dissolved		1.79	1.77		mg/L	1.0	20	08-FEB-19
Selenium (Se)-Dissolved		0.000214	0.000163	J	mg/L	0.000051	0.0001	08-FEB-19
Silicon (Si)-Dissolved		5.40	5.31		mg/L	1.7	20	08-FEB-19





## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4499927</b>							
<b>WG2985900-3</b>	<b>DUP</b>	<b>L2227330-1</b>						
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-FEB-19
Sodium (Na)-Dissolved		50.6	48.7		mg/L	3.8	20	08-FEB-19
Strontium (Sr)-Dissolved		0.315	0.319		mg/L	1.4	20	08-FEB-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	08-FEB-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	08-FEB-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	08-FEB-19
Uranium (U)-Dissolved		0.00231	0.00233		mg/L	0.7	20	08-FEB-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	08-FEB-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-FEB-19
<b>WG2985900-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.0		%		80-120	08-FEB-19
Antimony (Sb)-Dissolved			99.8		%		80-120	08-FEB-19
Arsenic (As)-Dissolved			98.0		%		80-120	08-FEB-19
Barium (Ba)-Dissolved			102.5		%		80-120	08-FEB-19
Bismuth (Bi)-Dissolved			88.9		%		80-120	08-FEB-19
Boron (B)-Dissolved			100.3		%		80-120	08-FEB-19
Cadmium (Cd)-Dissolved			101.3		%		80-120	08-FEB-19
Calcium (Ca)-Dissolved			96.2		%		80-120	08-FEB-19
Chromium (Cr)-Dissolved			102.8		%		80-120	08-FEB-19
Cobalt (Co)-Dissolved			102.5		%		80-120	08-FEB-19
Copper (Cu)-Dissolved			100.9		%		80-120	08-FEB-19
Iron (Fe)-Dissolved			102.2		%		80-120	08-FEB-19
Lead (Pb)-Dissolved			92.5		%		80-120	08-FEB-19
Lithium (Li)-Dissolved			95.1		%		80-120	08-FEB-19
Magnesium (Mg)-Dissolved			106.2		%		80-120	08-FEB-19
Manganese (Mn)-Dissolved			105.9		%		80-120	08-FEB-19
Molybdenum (Mo)-Dissolved			102.6		%		80-120	08-FEB-19
Nickel (Ni)-Dissolved			102.7		%		80-120	08-FEB-19
Potassium (K)-Dissolved			101.2		%		80-120	08-FEB-19
Selenium (Se)-Dissolved			94.4		%		80-120	08-FEB-19
Silicon (Si)-Dissolved			99.1		%		60-140	08-FEB-19
Silver (Ag)-Dissolved			96.0		%		80-120	08-FEB-19
Sodium (Na)-Dissolved			102.7		%		80-120	08-FEB-19
Strontium (Sr)-Dissolved			98.1		%		80-120	08-FEB-19



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4499927</b>							
<b>WG2985900-2</b>	<b>LCS</b>							
Thallium (Tl)-Dissolved			89.2		%		80-120	08-FEB-19
Tin (Sn)-Dissolved			101.4		%		80-120	08-FEB-19
Titanium (Ti)-Dissolved			98.5		%		80-120	08-FEB-19
Uranium (U)-Dissolved			95.3		%		80-120	08-FEB-19
Vanadium (V)-Dissolved			104.2		%		80-120	08-FEB-19
Zinc (Zn)-Dissolved			100.8		%		80-120	08-FEB-19
<b>WG2985900-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-FEB-19



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4499927</b>							
<b>WG2985900-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-FEB-19
<b>WG2985900-4</b>	<b>MS</b>	<b>L2227330-3</b>						
Aluminum (Al)-Dissolved			103.6		%		70-130	08-FEB-19
Antimony (Sb)-Dissolved			104.9		%		70-130	08-FEB-19
Arsenic (As)-Dissolved			103.0		%		70-130	08-FEB-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Bismuth (Bi)-Dissolved			87.0		%		70-130	08-FEB-19
Boron (B)-Dissolved			100.6		%		70-130	08-FEB-19
Cadmium (Cd)-Dissolved			103.2		%		70-130	08-FEB-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Chromium (Cr)-Dissolved			103.1		%		70-130	08-FEB-19
Cobalt (Co)-Dissolved			101.3		%		70-130	08-FEB-19
Copper (Cu)-Dissolved			97.2		%		70-130	08-FEB-19
Iron (Fe)-Dissolved			98.9		%		70-130	08-FEB-19
Lead (Pb)-Dissolved			92.5		%		70-130	08-FEB-19
Lithium (Li)-Dissolved			93.6		%		70-130	08-FEB-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Molybdenum (Mo)-Dissolved			107.1		%		70-130	08-FEB-19
Nickel (Ni)-Dissolved			99.2		%		70-130	08-FEB-19
Potassium (K)-Dissolved			102.8		%		70-130	08-FEB-19
Selenium (Se)-Dissolved			102.9		%		70-130	08-FEB-19
Silicon (Si)-Dissolved			97.7		%		70-130	08-FEB-19
Silver (Ag)-Dissolved			71.3		%		70-130	08-FEB-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	08-FEB-19
Thallium (Tl)-Dissolved			93.8		%		70-130	08-FEB-19
Tin (Sn)-Dissolved			103.6		%		70-130	08-FEB-19
Titanium (Ti)-Dissolved			102.7		%		70-130	08-FEB-19
Uranium (U)-Dissolved			101.8		%		70-130	08-FEB-19
Vanadium (V)-Dissolved			104.5		%		70-130	08-FEB-19
Zinc (Zn)-Dissolved			101.0		%		70-130	08-FEB-19



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4495856							
<b>WG2985350-2</b>	<b>LCS</b>							
Ammonia as N			90.7		%		85-115	07-FEB-19
<b>WG2985350-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-FEB-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4482738							
<b>WG2981551-14</b>	<b>LCS</b>							
Nitrite (as N)			104.6		%		90-110	31-JAN-19
<b>WG2981551-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	31-JAN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4482738							
<b>WG2981551-14</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	31-JAN-19
<b>WG2981551-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	31-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4486511							
<b>WG2982711-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	04-FEB-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4494674							
<b>WG2984985-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.6		%		80-120	07-FEB-19
<b>WG2984985-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	07-FEB-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4494674							
<b>WG2984985-10</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			98.6		%		80-120	07-FEB-19
<b>WG2984985-9</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	07-FEB-19
<b>PH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4493632							
WG2984145-12	DUP	L2227330-1						
pH		8.10	8.12	J	pH	0.02	0.2	06-FEB-19
WG2984145-11	LCS							
pH			7.01		pH		6.9-7.1	06-FEB-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4481327							
WG2981047-6	LCS							
Orthophosphate-Dissolved (as P)			103.0		%		80-120	31-JAN-19
WG2981047-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4482738							
WG2981551-14	LCS							
Sulfate (SO4)			98.8		%		90-110	31-JAN-19
WG2981551-13	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	31-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4492447							
WG2983477-2	LCS							
Total Dissolved Solids			100.3		%		85-115	05-FEB-19
WG2983477-1	MB							
Total Dissolved Solids			<10		mg/L		10	05-FEB-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4496572							
WG2984642-2	LCS							
Total Kjeldahl Nitrogen			90.8		%		75-125	07-FEB-19
WG2984642-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-FEB-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4489330							
WG2983167-5	LCS							
Total Suspended Solids			97.8		%		85-115	05-FEB-19
WG2983167-4	MB							
Total Suspended Solids			<1.0		mg/L		1	05-FEB-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4481272</b>							
<b>WG2981018-11</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	31-JAN-19
<b>WG2981018-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-JAN-19

# Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2227330

Report Date: 11-FEB-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	30-JAN-19 13:35	04-FEB-19 10:30	0.25	117	hours	EHTR-FM
	3	30-JAN-19 15:30	04-FEB-19 10:30	0.25	115	hours	EHTR-FM
pH	1	30-JAN-19 13:35	06-FEB-19 15:00	0.25	169	hours	EHTR-FM
	3	30-JAN-19 15:30	06-FEB-19 15:00	0.25	168	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2227330 were received on 31-JAN-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

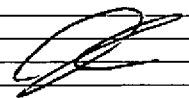
COC ID: 20190130Q1GW

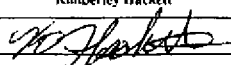
TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling		Lab Contact	Lyndnya Shvets		Email 1:	Bryan.Ogden@teck.com	X	X	X
Project Manager	Cameron Griffin		Email	lyndnya.shvets@alsglobal.com		Email 2:	teckcoal@equisonline.com	X	X	X
Email	Cameron.Griffin@Teck.com		Address	2519 29 St NE,		Email 3:	kimberley.hackett@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Cameron.Griffin@teck.com	X	X	X
						Email 5:	Teck.Lab.6@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VP00610851	
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7H5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	1 403 291 9897						

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	C=Grab C=Comp	# Of Cont.	FILTERED PRESERVED	ANALYSIS REQUESTED													
									No	No	Yes	Yes	Yes	No	1 No	No	No	No	Yes			
									Nitrite	Sulphuric	Sulphuric	Sulphuric	Total Nitrogen for BC (NO2 and NO3)	Sodium Bisulphate	HCl							
EV_MCgwS_WG_2019-01_NP	EV_MCgwS	WG	N	1/30/2019	13:35	G	5		TECK COAL-ROUTINE-VA (E306,1)	True Colour	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5110)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)								
EV_MCgwS_WG_2019-01_FB-HG	EV_MCgwS	WG	N	1/30/2019	13:35	G	1															
EV_MCgwD_WG_2019-01_NP	EV_MCgwD	WG	N	1/30/2019	15:30	G	5															
EV_MCgwD_WG_2019-01_FB-HG	EV_MCgwD	WG	N	1/30/2019	15:30	G	1															
Total							12															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	January 30, 2019		1/31 9:10

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #
Regular (default) X	Kimberley Hackett	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		
	Sampler's Signature 	Date/Time
		January 30, 2019



L2227330-COFC

4°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 01-FEB-19  
Report Date: 08-FEB-19 17:00 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2227716  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190131Q1GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2227716-1 WG 31-JAN-19 13:35 EV_ER1GWS_WG _2019-01_NP	L2227716-2 WG 31-JAN-19 13:45 EV_ER1GWD_WG _2019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0		
	Conductivity (@ 25C) (uS/cm)	526	469		
	Hardness (as CaCO3) (mg/L)	277	256		
	pH (pH)	8.19	8.26		
	ORP (mV)	334	445		
	Total Suspended Solids (mg/L)	<1.0	5.9		
	Total Dissolved Solids (mg/L)	328 <sup>DLHC</sup>	282 <sup>DLHC</sup>		
	Turbidity (NTU)	1.25	5.24		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.3	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	188	196		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	188	196		
	Ammonia as N (mg/L)	0.0177	0.0272		
	Bromide (Br) (mg/L)	0.057	<0.050		
	Chloride (Cl) (mg/L)	6.71	4.78		
	Fluoride (F) (mg/L)	0.166	0.203		
	Ion Balance (%)	97.2	96.6		
	Nitrate (as N) (mg/L)	2.02	1.40		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.195	0.201		
	Total Nitrogen (mg/L)	2.21	1.60		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0040	0.0043		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0038	0.0049		
	Phosphorus (P)-Total (mg/L)	0.0045	0.0081		
	Sulfate (SO4) (mg/L)	88.7	62.9		
	Anion Sum (meq/L)	5.95	5.47		
	Cation Sum (meq/L)	5.78	5.28		
	Cation - Anion Balance (%)	-1.4	-1.7		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50		
	Total Organic Carbon (mg/L)	<0.50	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0082		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00011	0.00011		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2227716-1 WG 31-JAN-19 13:35 EV_ER1GWS_WG _2019-01_NP	L2227716-2 WG 31-JAN-19 13:45 EV_ER1GWD_WG _2019-01_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.116	0.0844		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	0.0105	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	75.4	67.3		
	Chromium (Cr)-Dissolved (mg/L)	0.00029	0.00046		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	0.00052	<0.00050		
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0069	0.0064		
	Magnesium (Mg)-Dissolved (mg/L)	21.5	21.4		
	Manganese (Mn)-Dissolved (mg/L)	0.00012	0.00053		
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000960	0.00131		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	0.694	0.635		
	Selenium (Se)-Dissolved (ug/L)	11.1	7.69		
	Silicon (Si)-Dissolved (mg/L)	2.14	2.53		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	5.26	3.17		
	Strontium (Sr)-Dissolved (mg/L)	0.207	0.207		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00111	0.00135		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0020 <sup>DLB</sup>	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Zinc (Zn)-Dissolved	MB-LOR	L2227716-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2227716-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2227716-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time			

## Reference Information

of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B  
 Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B  
 Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)  
 Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E  
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)  
 Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated  
 Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC  
 This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498  
 This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS  
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS  
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode  
 pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS  
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190131Q1GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4494876							
<b>WG2984939-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.6		%		85-115	07-FEB-19
<b>WG2984939-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	07-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4493632							
<b>WG2984145-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	06-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4489847							
<b>WG2982972-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			92.2		%		80-120	05-FEB-19
<b>WG2982972-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4484456							
<b>WG2981962-3</b>	<b>DUP</b>	<b>L2227716-2</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-FEB-19
<b>WG2981962-2</b>	<b>LCS</b>							
Bromide (Br)			103.2		%		85-115	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Bromide (Br)			104.1		%		85-115	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-FEB-19
<b>WG2981962-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-FEB-19
<b>WG2981962-4</b>	<b>MS</b>	<b>L2227716-2</b>						
Bromide (Br)			113.4		%		75-125	01-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4489328							
<b>WG2983533-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.4		%		80-120	04-FEB-19
<b>WG2983533-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-FEB-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch	R4489328							
<b>WG2983533-2</b>	<b>LCS</b>							
Total Organic Carbon			109.7		%		80-120	04-FEB-19
<b>WG2983533-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-FEB-19
<b>CL-IC-N-CL</b>								
Batch	R4484456							
<b>WG2981962-3</b>	<b>DUP</b>	<b>L2227716-2</b>						
Chloride (Cl)		4.78	4.81		mg/L	0.6	20	01-FEB-19
<b>WG2981962-2</b>	<b>LCS</b>							
Chloride (Cl)			100.0		%		90-110	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Chloride (Cl)			99.8		%		90-110	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-FEB-19
<b>WG2981962-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-FEB-19
<b>WG2981962-4</b>	<b>MS</b>	<b>L2227716-2</b>						
Chloride (Cl)			106.0		%		75-125	01-FEB-19
<b>COLOUR-TRUE-CL</b>								
Batch	R4481070							
<b>WG2980972-2</b>	<b>LCS</b>							
Colour, True			101.2		%		85-115	31-JAN-19
<b>WG2980972-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	31-JAN-19
<b>EC-L-PCT-CL</b>								
Batch	R4493632							
<b>WG2984145-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.1		%		90-110	06-FEB-19
<b>F-IC-N-CL</b>								
Batch	R4484456							
<b>WG2981962-3</b>	<b>DUP</b>	<b>L2227716-2</b>						
Fluoride (F)		0.203	0.213		mg/L	4.9	20	01-FEB-19
<b>WG2981962-2</b>	<b>LCS</b>							
Fluoride (F)			106.0		%		90-110	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Fluoride (F)			104.6		%		90-110	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484456</b>							
<b>WG2981962-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-FEB-19
<b>WG2981962-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-FEB-19
<b>WG2981962-4</b>	<b>MS</b>	<b>L2227716-2</b>						
Fluoride (F)			110.9		%		75-125	01-FEB-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4493208</b>							
<b>WG2983965-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.5		%		80-120	07-FEB-19
<b>WG2983965-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	07-FEB-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4489847</b>							
<b>WG2982972-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.5		%		80-120	05-FEB-19
Antimony (Sb)-Dissolved			89.7		%		80-120	05-FEB-19
Arsenic (As)-Dissolved			96.0		%		80-120	05-FEB-19
Barium (Ba)-Dissolved			96.7		%		80-120	05-FEB-19
Bismuth (Bi)-Dissolved			94.8		%		80-120	05-FEB-19
Boron (B)-Dissolved			91.6		%		80-120	05-FEB-19
Cadmium (Cd)-Dissolved			95.1		%		80-120	05-FEB-19
Calcium (Ca)-Dissolved			94.8		%		80-120	05-FEB-19
Chromium (Cr)-Dissolved			97.6		%		80-120	05-FEB-19
Cobalt (Co)-Dissolved			94.5		%		80-120	05-FEB-19
Copper (Cu)-Dissolved			92.7		%		80-120	05-FEB-19
Iron (Fe)-Dissolved			93.6		%		80-120	05-FEB-19
Lead (Pb)-Dissolved			98.4		%		80-120	05-FEB-19
Lithium (Li)-Dissolved			90.7		%		80-120	05-FEB-19
Magnesium (Mg)-Dissolved			95.8		%		80-120	05-FEB-19
Manganese (Mn)-Dissolved			94.9		%		80-120	05-FEB-19
Molybdenum (Mo)-Dissolved			95.5		%		80-120	05-FEB-19
Nickel (Ni)-Dissolved			93.3		%		80-120	05-FEB-19
Potassium (K)-Dissolved			94.5		%		80-120	05-FEB-19
Selenium (Se)-Dissolved			94.2		%		80-120	05-FEB-19
Silicon (Si)-Dissolved			93.2		%		60-140	05-FEB-19



## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4489847</b>							
<b>WG2982972-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			90.5		%		80-120	05-FEB-19
Sodium (Na)-Dissolved			88.8		%		80-120	05-FEB-19
Strontium (Sr)-Dissolved			92.2		%		80-120	05-FEB-19
Thallium (Tl)-Dissolved			94.5		%		80-120	05-FEB-19
Tin (Sn)-Dissolved			93.0		%		80-120	05-FEB-19
Titanium (Ti)-Dissolved			95.1		%		80-120	05-FEB-19
Uranium (U)-Dissolved			94.9		%		80-120	05-FEB-19
Vanadium (V)-Dissolved			96.1		%		80-120	05-FEB-19
Zinc (Zn)-Dissolved			93.9		%		80-120	05-FEB-19
<b>WG2982972-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-FEB-19



## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4489847</b>							
<b>WG2982972-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-FEB-19
Zinc (Zn)-Dissolved			0.0019	MB-LOR	mg/L		0.001	05-FEB-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4495856</b>							
<b>WG2985350-6</b>	<b>LCS</b>							
Ammonia as N			90.3		%		85-115	07-FEB-19
<b>WG2985350-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	07-FEB-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484456</b>							
<b>WG2981962-3</b>	<b>DUP</b>	<b>L2227716-2</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-FEB-19
<b>WG2981962-2</b>	<b>LCS</b>							
Nitrite (as N)			104.2		%		90-110	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-FEB-19
<b>WG2981962-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-FEB-19
<b>WG2981962-4</b>	<b>MS</b>	<b>L2227716-2</b>						
Nitrite (as N)			110.1		%		75-125	01-FEB-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484456</b>							
<b>WG2981962-3</b>	<b>DUP</b>	<b>L2227716-2</b>						
Nitrate (as N)		1.40	1.40		mg/L	0.0	20	01-FEB-19
<b>WG2981962-2</b>	<b>LCS</b>							
Nitrate (as N)			99.6		%		90-110	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-FEB-19





## Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Batch R4484456</b>								
<b>WG2981962-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	01-FEB-19
<b>WG2981962-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	01-FEB-19
<b>WG2981962-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-FEB-19
<b>WG2981962-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-FEB-19
<b>WG2981962-4</b>	<b>MS</b>	<b>L2227716-2</b>						
Sulfate (SO4)			102.6		%		75-125	01-FEB-19
<b>SOLIDS-TDS-CL</b>								
<b>Batch R4496710</b>								
<b>WG2983876-5</b>	<b>LCS</b>							
Total Dissolved Solids			98.2		%		85-115	06-FEB-19
<b>WG2983876-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	06-FEB-19
<b>TKN-L-F-CL</b>								
<b>Batch R4489287</b>								
<b>WG2982541-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.7		%		75-125	05-FEB-19
<b>WG2982541-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-FEB-19
<b>TSS-L-CL</b>								
<b>Batch R4489330</b>								
<b>WG2983167-5</b>	<b>LCS</b>							
Total Suspended Solids			97.8		%		85-115	05-FEB-19
<b>WG2983167-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	05-FEB-19
<b>TURBIDITY-CL</b>								
<b>Batch R4484314</b>								
<b>WG2981750-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	01-FEB-19
<b>WG2981750-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-FEB-19

# Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2227716

Report Date: 08-FEB-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	31-JAN-19 13:35	04-FEB-19 10:30	0.25	93	hours	EHTR-FM
	2	31-JAN-19 13:45	04-FEB-19 10:30	0.25	93	hours	EHTR-FM
pH	1	31-JAN-19 13:35	06-FEB-19 15:00	0.25	145	hours	EHTR-FM
	2	31-JAN-19 13:45	06-FEB-19 15:00	0.25	145	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2227716 were received on 01-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 20190131Q1GW		TURNAROUND TIME:		RUSH:
PROJECT/CLIENT INFO			LABORATORY	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	
Job Description	Q1 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	
Project Manager	Cameron Griffin	Email	lyudmyla.shvets@alglobal.com	
Email	Cameron.Griffin@Teck.com	Address	2539 29 St NE	
Address	RR#1 HWY# 3			
City	Sparwood	Province	BC	City
Postal Code	V1C 4C3	Country	Canada	Postal Code
Phone Number	1-250-865-5289			City
				Province
				Country
				Phone Number

Report Format / Distribution	Excel	PDF	EDD
Email 1:	Bryan.Gyden@teck.com	X	X
Email 2:	teckops@equisonline.com	X	X
Email 3:	kimberley.hackett@teck.com	X	X
Email 4:	Cameron.Griffin@teck.com	X	X
Email 5:	Teck.Lab.Results@sharepoint.teck.com	X	X
PO #	VPO00610852		

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	PH-TITRATED	ANALYSIS REQUESTED											
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
									TECKCOAL-ROUTINE-VA (E005.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-MORG)	Total Nitrogen for BC (NOL and N03)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C12)	D-Mercury	
EV_ER1gwS_WG_2019-01_NP	EV_ER1gwS	WG	N	1/31/2019	13:35	G	5		I		I	I		I					I	
EV_ER1gwD_WG_2019-01_NP	EV_ER1gwD	WG	N	1/31/2019	13:45	G	5		I		I	I		I					I	
Total							10													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	January 31, 2019	<i>A</i>	2/1/20

<input checked="" type="checkbox"/> Regular (default) <input type="checkbox"/> Priority (2-3 business days) - 50% surcharge <input type="checkbox"/> Emergency (1 Business Day) - 100% surcharge For Emergency < 1 Day, ASAP or Weekend - Contact ALS	Sampler's Name: Kimberley Hackett Sampler's Signature: <i>Kimberley Hackett</i>	Mobile #: Date/Time: January 31, 2019
--	--	--



L2227716-COFC

*5*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 28-FEB-19  
Report Date: 07-MAR-19 18:27 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2238208  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 201902Q1GW  
Legal Site Desc:

Comments: 7-MAR-2019 Total Nitrogen result added.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2238208-1 WG 27-FEB-19 12:10 EV_WF_SW_WG_ 2019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	508			
	Hardness (as CaCO3) (mg/L)	268			
	pH (pH)	8.08			
	ORP (mV)	381			
	Total Suspended Solids (mg/L)	15.4			
	Total Dissolved Solids (mg/L)	352			
	Turbidity (NTU)	17.8			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	73.5			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	73.5			
	Ammonia as N (mg/L)	0.185			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	2.99			
	Fluoride (F) (mg/L)	0.091			
	Ion Balance (%)	106			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.315			
	Total Nitrogen (mg/L)	0.315			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0070			
	Phosphorus (P)-Total (mg/L)	0.0116			
	Sulfate (SO4) (mg/L)	180			
	Anion Sum (meq/L)	5.30			
	Cation Sum (meq/L)	5.63			
	Cation - Anion Balance (%)	3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.21			
	Total Organic Carbon (mg/L)	2.44			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2238208-1 WG 27-FEB-19 12:10 EV_WF_SW_WG_ 2019-01_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.00450			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0051			
	Calcium (Ca)-Dissolved (mg/L)	17.9			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.320			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0125			
	Magnesium (Mg)-Dissolved (mg/L)	54.1			
	Manganese (Mn)-Dissolved (mg/L)	0.323			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000865			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.40			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	0.117			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.22			
	Strontium (Sr)-Dissolved (mg/L)	0.0121			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00021			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000046			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2238208-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2238208-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2238208-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2238208-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2238208-1
Matrix Spike	Ammonia as N	MS-B	L2238208-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

201902Q1GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4546827</b>							
<b>WG3001185-15</b>	<b>DUP</b>	<b>L2238208-1</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	06-MAR-19
<b>WG3001185-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.9		%		85-115	06-MAR-19
<b>WG3001185-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	06-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4546428</b>							
<b>WG3001123-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.1		%		85-115	06-MAR-19
<b>WG3001123-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4542527</b>							
<b>WG2999383-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			86.5		%		80-120	04-MAR-19
<b>WG2999383-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	04-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4538505</b>							
<b>WG2998658-2</b>	<b>LCS</b>							
Bromide (Br)			99.9		%		85-115	01-MAR-19
<b>WG2998658-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4550567</b>							
<b>WG3002143-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.0		%		80-120	07-MAR-19
<b>WG3002143-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4550567</b>							
<b>WG3002143-2</b>	<b>LCS</b>							
Total Organic Carbon			100.9		%		80-120	07-MAR-19
<b>WG3002143-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	07-MAR-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4538505							
<b>WG2998658-2</b>	<b>LCS</b>							
Chloride (Cl)			99.4		%		90-110	01-MAR-19
<b>WG2998658-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-MAR-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4531808							
<b>WG2996787-2</b>	<b>LCS</b>							
Colour, True			100.4		%		85-115	27-FEB-19
<b>WG2996787-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	27-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4546428							
<b>WG3001123-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.6		%		90-110	06-MAR-19
<b>WG3001123-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4538505							
<b>WG2998658-2</b>	<b>LCS</b>							
Fluoride (F)			99.99		%		90-110	01-MAR-19
<b>WG2998658-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4543449							
<b>WG2999278-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.7		%		80-120	05-MAR-19
<b>WG2999278-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-MAR-19
Batch	R4546357							
<b>WG2999278-4</b>	<b>MS</b>	<b>L2238208-1</b>						
Mercury (Hg)-Dissolved			90.6		%		70-130	06-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4542527							
<b>WG2999383-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			87.8		%		80-120	04-MAR-19
Antimony (Sb)-Dissolved			93.1		%		80-120	04-MAR-19



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4542527</b>							
<b>WG2999383-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			88.4		%		80-120	04-MAR-19
Barium (Ba)-Dissolved			96.3		%		80-120	04-MAR-19
Bismuth (Bi)-Dissolved			101.4		%		80-120	04-MAR-19
Boron (B)-Dissolved			85.3		%		80-120	04-MAR-19
Cadmium (Cd)-Dissolved			95.8		%		80-120	04-MAR-19
Calcium (Ca)-Dissolved			89.3		%		80-120	04-MAR-19
Chromium (Cr)-Dissolved			89.3		%		80-120	04-MAR-19
Cobalt (Co)-Dissolved			87.6		%		80-120	04-MAR-19
Copper (Cu)-Dissolved			87.0		%		80-120	04-MAR-19
Iron (Fe)-Dissolved			80.7		%		80-120	04-MAR-19
Lead (Pb)-Dissolved			91.3		%		80-120	04-MAR-19
Lithium (Li)-Dissolved			85.6		%		80-120	04-MAR-19
Magnesium (Mg)-Dissolved			84.8		%		80-120	04-MAR-19
Manganese (Mn)-Dissolved			87.3		%		80-120	04-MAR-19
Molybdenum (Mo)-Dissolved			94.8		%		80-120	04-MAR-19
Nickel (Ni)-Dissolved			87.2		%		80-120	04-MAR-19
Potassium (K)-Dissolved			81.5		%		80-120	04-MAR-19
Selenium (Se)-Dissolved			91.1		%		80-120	04-MAR-19
Silicon (Si)-Dissolved			89.6		%		60-140	04-MAR-19
Silver (Ag)-Dissolved			90.3		%		80-120	04-MAR-19
Sodium (Na)-Dissolved			91.6		%		80-120	04-MAR-19
Strontium (Sr)-Dissolved			93.3		%		80-120	04-MAR-19
Thallium (Tl)-Dissolved			91.6		%		80-120	04-MAR-19
Tin (Sn)-Dissolved			92.1		%		80-120	04-MAR-19
Titanium (Ti)-Dissolved			88.0		%		80-120	04-MAR-19
Uranium (U)-Dissolved			87.2		%		80-120	04-MAR-19
Vanadium (V)-Dissolved			89.3		%		80-120	04-MAR-19
Zinc (Zn)-Dissolved			88.8		%		80-120	04-MAR-19
<b>WG2999383-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	04-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	04-MAR-19



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4542527</b>							
<b>WG2999383-1</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	04-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	04-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	04-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	04-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	04-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	04-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	04-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	04-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	04-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	04-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	04-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	04-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	04-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	04-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	04-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	04-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	04-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	04-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	04-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	04-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4546793</b>							
<b>WG3000804-2</b>	<b>LCS</b>							
Ammonia as N			98.8		%		85-115	05-MAR-19
<b>WG3000804-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4538505							
<b>WG2998658-2</b>	<b>LCS</b>							
Nitrite (as N)			104.0		%		90-110	01-MAR-19
<b>WG2998658-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-MAR-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4538505							
<b>WG2998658-2</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	01-MAR-19
<b>WG2998658-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-MAR-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4544327							
<b>WG3000440-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	05-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4540732							
<b>WG2999455-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.5		%		80-120	04-MAR-19
<b>WG2999455-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4540732							
<b>WG2999455-18</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			104.5		%		80-120	04-MAR-19
<b>WG2999455-17</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4546428							
<b>WG3001123-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	06-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4537350							
<b>WG2998128-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.5		%		80-120	01-MAR-19
<b>WG2998128-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4537350							
<b>WG2998128-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4538505							
<b>WG2998658-2 LCS</b>								
Sulfate (SO4)			99.6		%		90-110	01-MAR-19
<b>WG2998658-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	01-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4546887							
<b>WG3000414-6 DUP</b>		<b>L2238208-1</b>						
Total Dissolved Solids		352	334		mg/L	5.4	20	05-MAR-19
<b>WG3000414-5 LCS</b>								
Total Dissolved Solids			98.8		%		85-115	05-MAR-19
<b>WG3000414-4 MB</b>								
Total Dissolved Solids			<10		mg/L		10	05-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4545949							
<b>WG2998092-2 LCS</b>								
Total Kjeldahl Nitrogen			101.9		%		75-125	05-MAR-19
<b>WG2998092-6 LCS</b>								
Total Kjeldahl Nitrogen			96.0		%		75-125	05-MAR-19
<b>WG2998092-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>WG2998092-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4536991							
<b>WG2997068-7 LCS</b>								
Total Suspended Solids			99.9		%		85-115	28-FEB-19
<b>WG2997068-6 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-FEB-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4534769</b>							
<b>WG2997568-12</b>	<b>DUP</b>	<b>L2238208-1</b>						
Turbidity		17.8	17.9		NTU	0.6	15	28-FEB-19
<b>WG2997568-11</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	28-FEB-19
<b>WG2997568-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-FEB-19

# Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2238208

Report Date: 07-MAR-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-FEB-19 12:10	05-MAR-19 10:30	0.25	142	hours	EHTR-FM
pH	1	27-FEB-19 12:10	06-MAR-19 10:00	0.25	166	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2238208 were received on 28-FEB-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

**COC ID:**
**201902Q1GW**
**TURNAROUND TIME:**
**RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q1 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	bryan.ogden@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 St NE,			Email 3:	Kimberley.hackett@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@teck.com	X	X	X
								Email 5:	TeckLab.Results@sharpoint.teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	538790			
Postal Code	VIC 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403 291 9897							

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C=Comp	# Of Cont.	FILL/SPLO PICKUP/AVOID	ANALYSIS REQUESTED											
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	
									Nitric	Sulphuric	Sulphuric	Sulphuric	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury			
EV_WF_SW_WG_2019-01_NP	EV_WF_SW	WG	N	2/27/2019	12:10	G	5		TECKCOAL-ROUTINE-VIA (E105.1)	1		1	1	1			1			
							Total	5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	February 27, 2019	<i>[Signature]</i>	2/27/2019 9:05

NO OF BOTTLES RETURNED/DESCRIPTION	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
	X				Kimberley Hackett	<i>[Signature]</i>		February 27, 2019



L2238208-COFC

4



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 05-MAR-19  
Report Date: 14-MAR-19 10:25 (MT)  
Version: FINAL

Client Phone: 250-910-8431

## Certificate of Analysis

Lab Work Order #: L2239910  
Project P.O. #: VPO00618734  
Job Reference: REGINAL EFFECT PROGRAM  
C of C Numbers: EV\_GW Sampling  
Legal Site Desc:

Comments: Detection Limit for TSS raised on samples L2239910-2 and -3 due to limited samples. Samples were leaking during transit.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2239910-1	L2239910-2	L2239910-3	L2239910-4	L2239910-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	04-MAR-19	04-MAR-19	04-MAR-19	04-MAR-19	04-MAR-19
		Sampled Time	12:40	12:00	12:00	14:55	14:00
		Client ID	EV_MW_MC2-A_WG_Q1-2019_NP	EV_MW_MC2-B_WG_Q1-2019_NP	EV_MW_MC2-C_WG_Q1-2019_NP	EV_MW_SC1-B_WG_Q1-2019_NP	EV_MW_SC1-C_WG_Q1-2019_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	914	1200	1190	510	722	
	Hardness (as CaCO3) (mg/L)	402	675	647	175	384	
	pH (pH)	7.59	8.08	8.18	7.95	7.64	
	ORP (mV)	414	403	399	376	403	
	Total Suspended Solids (mg/L)	13.1	<16 <sup>HTD</sup>	<8.0 <sup>HTD</sup>	78.3	<1.0	
	Total Dissolved Solids (mg/L)	499	893	868	323	512	
	Turbidity (NTU)	22.7	0.73	1.81	102	0.52	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	22.3	2.6	1.7	3.7	7.6	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	390	241	243	222	227	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	390	241	243	222	227	
	Ammonia as N (mg/L)	<0.0050	0.222	<0.0050	<0.0050	<0.0050	
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>	0.41 <sup>DLHC</sup>	0.41 <sup>DLHC</sup>	<0.050	0.348	
	Chloride (Cl) (mg/L)	82.5 <sup>DLHC</sup>	26.1 <sup>DLHC</sup>	26.1 <sup>DLHC</sup>	3.76	15.6	
	Fluoride (F) (mg/L)	0.26 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>	0.14 <sup>DLHC</sup>	1.14	0.142	
	Ion Balance (%)	95.7	95.2	91.3	87.9	95.5	
	Nitrate (as N) (mg/L)	0.058 <sup>DLHC</sup>	9.53 <sup>DLHC</sup>	9.53 <sup>DLHC</sup>	0.0151	1.91	
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0036	0.0012	
	Total Kjeldahl Nitrogen (mg/L)	0.802	0.333 <sup>TKNI</sup>	0.267 <sup>TKNI</sup>	0.359	0.261	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0036	0.0032	0.0016	0.0032	
	Phosphorus (P)-Total (mg/L)	0.0167	0.0049	0.0048	0.116 <sup>DLHC</sup>	0.0053	
	Sulfate (SO4) (mg/L)	5.8 <sup>DLHC</sup>	408 <sup>DLHC</sup>	406 <sup>DLHC</sup>	72.1	154	
	Anion Sum (meq/L)	10.3	14.7	14.7	6.11	8.33	
	Cation Sum (meq/L)	9.82	14.0	13.5	5.37	7.95	
	Cation - Anion Balance (%)	-2.2	-2.4	-4.5	-6.5	-2.3	
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.54	0.96	0.82	2.30	0.86
Total Organic Carbon (mg/L)		0.73	0.81	0.94	2.01	0.85	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00042	<0.00010	0.00010	0.00138	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00267	<0.00010	0.00011	0.00070	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	5.45	0.0535	0.0541	0.0608	0.159	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2239910-1	L2239910-2	L2239910-3	L2239910-4	L2239910-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	04-MAR-19	04-MAR-19	04-MAR-19	04-MAR-19	04-MAR-19
		Sampled Time	12:40	12:00	12:00	14:55	14:00
		Client ID	EV_MW_MC2-A_WG_Q1-2019_NP	EV_MW_MC2-B_WG_Q1-2019_NP	EV_MW_MC2-C_WG_Q1-2019_NP	EV_MW_SC1-B_WG_Q1-2019_NP	EV_MW_SC1-C_WG_Q1-2019_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.060	0.025	0.024	0.124	0.014
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	0.110	0.0966	0.0184	0.0554
	Calcium (Ca)-Dissolved (mg/L)		106	169	160	43.0	103
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00014	0.00018	<0.00010	0.00011
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	0.23	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		1.22	0.045	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.219	0.0558	0.0512	0.0154	0.0147
	Magnesium (Mg)-Dissolved (mg/L)		33.4	61.2	60.2	16.5	30.6
	Manganese (Mn)-Dissolved (mg/L)		0.0625	0.00024	0.00088	0.0823	0.00054
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000650	0.000580	0.000561	0.0239	0.000711
	Nickel (Ni)-Dissolved (mg/L)		0.00075	0.00064	0.00075	0.00099	<0.00050
	Potassium (K)-Dissolved (mg/L)		3.81	2.16	2.18	1.89	1.23
	Selenium (Se)-Dissolved (ug/L)		<0.050	51.9	50.4	1.95	16.8
	Silicon (Si)-Dissolved (mg/L)		3.87	3.22	3.18	3.13	2.62
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		37.4	11.3	10.8	41.6	5.65
	Strontium (Sr)-Dissolved (mg/L)		1.41	0.339	0.348	0.489	0.213
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000041	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000129	0.00148	0.00150	0.00712	0.00118
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0041	0.0024	0.0129	0.0015	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2239910-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-CL**                              Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TSS-L-CL**                              Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

EV\_GW Sampling

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 1 of 9

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4552917</b>							
<b>WG3002902-6</b>	<b>DUP</b>	<b>L2239910-1</b>						
Acidity (as CaCO3)		22.3	21.6		mg/L	3.3	20	08-MAR-19
<b>WG3002902-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.8		%		85-115	08-MAR-19
<b>WG3002902-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.4		%		85-115	08-MAR-19
<b>WG3002902-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	08-MAR-19
<b>WG3002902-7</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	08-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4552887</b>							
<b>WG3002878-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	08-MAR-19
<b>WG3002878-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4548687</b>							
<b>WG3001391-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.7		%		80-120	07-MAR-19
<b>WG3001391-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4552247</b>							
<b>WG3002755-2</b>	<b>LCS</b>							
Bromide (Br)			99.1		%		85-115	07-MAR-19
<b>WG3002755-6</b>	<b>LCS</b>							
Bromide (Br)			100.7		%		85-115	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-MAR-19
<b>WG3002755-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4555460</b>							
<b>WG3003785-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.2		%		80-120	10-MAR-19
<b>WG3003785-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4555460							
<b>WG3003785-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-MAR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4555460							
<b>WG3003785-2 LCS</b>								
Total Organic Carbon			101.4		%		80-120	10-MAR-19
<b>WG3003785-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	10-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-2 LCS</b>								
Chloride (Cl)			98.2		%		90-110	07-MAR-19
<b>WG3002755-6 LCS</b>								
Chloride (Cl)			98.7		%		90-110	07-MAR-19
<b>WG3002755-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-MAR-19
<b>WG3002755-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-11 LCS</b>								
Conductivity (@ 25C)			100.3		%		90-110	08-MAR-19
<b>WG3002878-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-2 LCS</b>								
Fluoride (F)			98.9		%		90-110	07-MAR-19
<b>WG3002755-6 LCS</b>								
Fluoride (F)			97.2		%		90-110	07-MAR-19
<b>WG3002755-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	07-MAR-19
<b>WG3002755-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	07-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4553648</b>							
<b>WG3001827-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.6		%		80-120	09-MAR-19
<b>WG3001827-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-MAR-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4548687</b>							
<b>WG3001391-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			90.6		%		80-120	07-MAR-19
Antimony (Sb)-Dissolved			91.2		%		80-120	07-MAR-19
Arsenic (As)-Dissolved			85.6		%		80-120	07-MAR-19
Barium (Ba)-Dissolved			86.3		%		80-120	07-MAR-19
Bismuth (Bi)-Dissolved			92.8		%		80-120	07-MAR-19
Boron (B)-Dissolved			90.9		%		80-120	07-MAR-19
Cadmium (Cd)-Dissolved			89.0		%		80-120	07-MAR-19
Calcium (Ca)-Dissolved			98.3		%		80-120	07-MAR-19
Chromium (Cr)-Dissolved			88.4		%		80-120	07-MAR-19
Cobalt (Co)-Dissolved			87.8		%		80-120	07-MAR-19
Copper (Cu)-Dissolved			85.7		%		80-120	07-MAR-19
Iron (Fe)-Dissolved			84.5		%		80-120	07-MAR-19
Lead (Pb)-Dissolved			95.4		%		80-120	07-MAR-19
Lithium (Li)-Dissolved			96.4		%		80-120	07-MAR-19
Magnesium (Mg)-Dissolved			88.0		%		80-120	07-MAR-19
Manganese (Mn)-Dissolved			91.6		%		80-120	07-MAR-19
Molybdenum (Mo)-Dissolved			90.5		%		80-120	07-MAR-19
Nickel (Ni)-Dissolved			84.8		%		80-120	07-MAR-19
Potassium (K)-Dissolved			91.8		%		80-120	07-MAR-19
Selenium (Se)-Dissolved			91.9		%		80-120	07-MAR-19
Silicon (Si)-Dissolved			87.0		%		60-140	07-MAR-19
Silver (Ag)-Dissolved			91.8		%		80-120	07-MAR-19
Sodium (Na)-Dissolved			87.4		%		80-120	07-MAR-19
Strontium (Sr)-Dissolved			93.2		%		80-120	07-MAR-19
Thallium (Tl)-Dissolved			91.3		%		80-120	07-MAR-19
Tin (Sn)-Dissolved			85.0		%		80-120	07-MAR-19
Titanium (Ti)-Dissolved			84.6		%		80-120	07-MAR-19
Uranium (U)-Dissolved			96.5		%		80-120	07-MAR-19



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4548687</b>							
<b>WG3001391-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			89.1		%		80-120	07-MAR-19
Zinc (Zn)-Dissolved			83.1		%		80-120	07-MAR-19
<b>WG3001391-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-MAR-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4554213								
WG3003113-6	LCS							
Ammonia as N			100.2		%		85-115	07-MAR-19
WG3003113-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	07-MAR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4552247								
WG3002755-2	LCS							
Nitrite (as N)			102.5		%		90-110	07-MAR-19
WG3002755-6	LCS							
Nitrite (as N)			103.1		%		90-110	07-MAR-19
WG3002755-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-MAR-19
WG3002755-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-MAR-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4552247								
WG3002755-2	LCS							
Nitrate (as N)			98.4		%		90-110	07-MAR-19
WG3002755-6	LCS							
Nitrate (as N)			99.6		%		90-110	07-MAR-19
WG3002755-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-MAR-19
WG3002755-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-MAR-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4553389								
WG3002990-1	CRM	CL-ORP						
ORP			220		mV		210-230	08-MAR-19
WG3002990-2	DUP	L2239910-5						
ORP		403	393	J	mV	9.9	15	08-MAR-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R4545749								
WG3000917-18	LCS							
Phosphorus (P)-Total			94.5		%		80-120	06-MAR-19
WG3000917-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-MAR-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	08-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4544147							
<b>WG2999497-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.9		%		80-120	05-MAR-19
<b>WG2999497-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4552247							
<b>WG3002755-2</b>	<b>LCS</b>							
Sulfate (SO4)			97.6		%		90-110	07-MAR-19
<b>WG3002755-6</b>	<b>LCS</b>							
Sulfate (SO4)			98.6		%		90-110	07-MAR-19
<b>WG3002755-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-MAR-19
<b>WG3002755-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4553796							
<b>WG3003011-8</b>	<b>LCS</b>							
Total Dissolved Solids			100.9		%		85-115	08-MAR-19
<b>WG3003011-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	08-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4552996							
<b>WG3002929-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.6		%		75-125	08-MAR-19
<b>WG3002929-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAR-19
<b>TSS-CL</b>	<b>Water</b>							
Batch	R4562487							
<b>WG3005892-2</b>	<b>LCS</b>							
Total Suspended Solids			98.5		%		85-115	13-MAR-19
<b>WG3005892-1</b>	<b>MB</b>							
Total Suspended Solids			<3.0		mg/L		3	13-MAR-19



## Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559193</b>							
<b>WG3003692-4</b>	<b>LCS</b>							
Total Suspended Solids			96.9		%		85-115	11-MAR-19
<b>WG3003692-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	11-MAR-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4547371</b>							
<b>WG3001357-9</b>	<b>DUP</b>	<b>L2239910-4</b>						
Turbidity		102	103		NTU	1.0	15	06-MAR-19
<b>WG3001357-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	06-MAR-19
<b>WG3001357-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	06-MAR-19

# Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2239910

Report Date: 14-MAR-19

Page 9 of 9

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	04-MAR-19 12:40	08-MAR-19 15:30	0.25	99	hours	EHTR-FM
	2	04-MAR-19 12:00	08-MAR-19 15:30	0.25	100	hours	EHTR-FM
	3	04-MAR-19 12:00	08-MAR-19 15:30	0.25	100	hours	EHTR-FM
	4	04-MAR-19 14:55	08-MAR-19 15:30	0.25	96	hours	EHTR-FM
	5	04-MAR-19 14:00	08-MAR-19 15:30	0.25	97	hours	EHTR-FM
Total Suspended Solids	2	04-MAR-19 12:00	13-MAR-19 12:00	7	9	days	EHT
	3	04-MAR-19 12:00	13-MAR-19 12:00	7	9	days	EHT
pH	1	04-MAR-19 12:40	08-MAR-19 09:00	0.25	92	hours	EHTR-FM
	2	04-MAR-19 12:00	08-MAR-19 09:00	0.25	93	hours	EHTR-FM
	3	04-MAR-19 12:00	08-MAR-19 09:00	0.25	93	hours	EHTR-FM
	4	04-MAR-19 14:55	08-MAR-19 09:00	0.25	90	hours	EHTR-FM
	5	04-MAR-19 14:00	08-MAR-19 09:00	0.25	91	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2239910 were received on 05-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: **EV\_GWSampling\_2019-03-04**

TURNAROUND TIME: **Regular**

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO		
Facility Name / Job# Regional Effects Program				Lab Name ALS Calgary		Repon Format / Distribution		Excel	PDF	EDD
Project Manager Allie Ferguson				Lab Contact Lyudmyla Shvets		Email 1: <a href="mailto:Allie.Ferguson@teck.com">Allie.Ferguson@teck.com</a>		X	X	X
Email <a href="mailto:allie.ferguson@teck.com">allie.ferguson@teck.com</a>				Email <a href="mailto:Lyudmyla.Shvets@alslab.com">Lyudmyla.Shvets@alslab.com</a>		Email 2: <a href="mailto:jennifer.stewart@teck.com">jennifer.stewart@teck.com</a>		X	X	X
Address 421 Pine Ave				Address 2559 29 st NE		Email 3: <a href="mailto:brian.bansen1@epslavallo.com">brian.bansen1@epslavallo.com</a>		X	X	X
City Sparwood Province BC				City Calgary Province AB		Email 4: <a href="mailto:teckcoal@epslabonline.com">teckcoal@epslabonline.com</a>				X
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada		Email 5:				
Phone Number 250-910-8431				Phone Number 403-407-1800		PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F; Field L; Lab; Field A; Lab; N; None



L2239910-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TKN/OC	HG-D-CVAEVA	TECKCOAL-NET-D-VA	TECKCOAL-ROUTINE-VA	F	N	P	F	N	
EV_MW_MC2-A_WG_Q1-2019_NP	EV_MW_MC2-A	WG	N	4-Mar-19	12:40	G	5											
EV_MW_MC2-B_WG_Q1-2019_NP	EV_MW_MC2-B	WG	N	4-Mar-19	12:00	G	5											
EV_MW_MC2-C_WG_Q1-2019_NP	EV_MW_MC2-C	WG	N	4-Mar-19	12:00	G	5											
EV_MW_SCI-B_WG_Q1-2019_NP	EV_MW_SCI-B	WG	N	4-Mar-19	14:55	G	5											
EV_MW_SCI-C_WG_Q1-2019_NP	EV_MW_SCI-C	WG	N	4-Mar-19	14:00	G	5											

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)    
 Priority (2-3 business days) - 50% surcharge   
 Emergency (1 Business Day) - 100% surcharge   
 For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

*Alex Heath*

Mobile #

Sampler's Signature

Date/Time

3/5

9:00

4°C



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 06-MAR-19  
Report Date: 14-MAR-19 10:31 (MT)  
Version: FINAL

Client Phone: 250-910-8431

## Certificate of Analysis

Lab Work Order #: L2240671  
Project P.O. #: VPO00618734  
Job Reference: REGINAL EFFECT PROGRAM  
C of C Numbers: EV\_GWSampling  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

14-MAR-19 10:31 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2240671-1	L2240671-2	L2240671-3	L2240671-4	L2240671-5
					WG	WG	WG	WG	WG
		05-MAR-19	15:30		05-MAR-19	05-MAR-19	05-MAR-19	05-MAR-19	05-MAR-19
					12:30	12:30	14:00	14:25	10:15
					EV_MW_MC1-	EV_MW_GC1-	EV_MW_GC1-	EV_MW_BC1-	EV_MW_BC1-
					A_WG_Q1-	A_WG_Q1-	B_WG_Q1-	A_WG_Q1-	B_WG_Q1-
					2019_NP	2019_NP	2019_NP	2019_NP	2019_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	936	542	881	1820	1990			
	Hardness (as CaCO3) (mg/L)	409	282	497	1140	1270			
	pH (pH)	7.83	8.10	8.10	7.76	7.80			
	ORP (mV)	409	323	433	331	416			
	Total Suspended Solids (mg/L)	173	5.3	2.8	478	2.7			
	Total Dissolved Solids (mg/L)	520	313	618	1430	1650			
	Turbidity (NTU)	146	2.61	1.11	411	0.36			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	17.6	2.6	3.1	10.0	8.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	387	183	195	275	257			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	387	183	195	275	257			
	Ammonia as N (mg/L)	1.75 <sup>DLHC</sup>	0.143	0.0172	0.0214	0.0301			
	Bromide (Br) (mg/L)	0.36 <sup>DLHC</sup>	<0.050	0.95 <sup>DLHC</sup>	4.97 <sup>DLHC</sup>	6.54 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	82.3 <sup>DLHC</sup>	2.22	5.6 <sup>DLHC</sup>	24.7 <sup>DLHC</sup>	25.2 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.18 <sup>DLHC</sup>	0.104	0.10 <sup>DLHC</sup>	0.12 <sup>DLHC</sup>	0.24 <sup>DLHC</sup>			
	Ion Balance (%)	94.1	97.4	101	102	100			
	Nitrate (as N) (mg/L)	<0.025 <sup>HTD</sup>	<0.0050 <sup>HTD</sup>	5.07 <sup>HTD</sup>	15.3 <sup>HTD</sup>	18.4 <sup>HTD</sup>			
	Nitrite (as N) (mg/L)	0.0054 <sup>HTD</sup>	0.0041 <sup>HTD</sup>	0.0114 <sup>HTD</sup>	0.0269 <sup>HTD</sup>	0.0189 <sup>HTD</sup>			
	Total Kjeldahl Nitrogen (mg/L)	1.76	0.165	0.164	0.883	<0.050 <sup>TKNI</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0075	0.0079	<0.0010	0.0137			
	Phosphorus (P)-Total (mg/L)	0.17 <sup>DLHC</sup>	0.0145	0.0090	0.689 <sup>DLHC</sup>	0.0140 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	<1.5 <sup>DLHC</sup>	107	270 <sup>DLHC</sup>	753 <sup>DLHC</sup>	893 <sup>DLHC</sup>			
	Anion Sum (meq/L)	10.1	5.95	10.0	23.0	25.8			
	Cation Sum (meq/L)	9.47	5.79	10.2	23.5	25.9			
	Cation - Anion Balance (%)	-3.1	-1.3	0.7	1.1	0.2			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.24	0.80	0.63	0.86	0.84 <sup>DTC</sup>		
Total Organic Carbon (mg/L)		1.62	0.72	0.62	1.37	0.61 <sup>DTC</sup>			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00161	0.00046	0.00063	0.00112	0.00128			
	Arsenic (As)-Dissolved (mg/L)	0.00253	0.00066	0.00023	0.00028	0.00031			
	Barium (Ba)-Dissolved (mg/L)	11.4	0.0790	0.0265	0.0551	0.0357			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2240671-6 WG 05-MAR-19 15:32 EV_MW_MC1- B_WG_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	937			
	Hardness (as CaCO3) (mg/L)	436			
	pH (pH)	7.84			
	ORP (mV)	296			
	Total Suspended Solids (mg/L)	33.7			
	Total Dissolved Solids (mg/L)	518			
	Turbidity (NTU)	122			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	10.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	362			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	362			
	Ammonia as N (mg/L)	0.283			
	Bromide (Br) (mg/L)	0.42	DLHC		
	Chloride (Cl) (mg/L)	80.9	DLHC		
	Fluoride (F) (mg/L)	0.16	DLHC		
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	<0.025	HTD		
	Nitrite (as N) (mg/L)	<0.0050	HTD		
	Total Kjeldahl Nitrogen (mg/L)	0.298			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0279			
	Sulfate (SO4) (mg/L)	19.7	DLHC		
	Anion Sum (meq/L)	9.94			
	Cation Sum (meq/L)	10.3			
	Cation - Anion Balance (%)	1.6			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.91		
Total Organic Carbon (mg/L)		1.81			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00399			
	Barium (Ba)-Dissolved (mg/L)	1.01			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2240671-1	L2240671-2	L2240671-3	L2240671-4	L2240671-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	05-MAR-19	05-MAR-19	05-MAR-19	05-MAR-19	05-MAR-19
		Sampled Time	15:30	12:30	14:00	14:25	10:15
		Client ID	EV_MW_MC1-A_WG_Q1-2019_NP	EV_MW_GC1-A_WG_Q1-2019_NP	EV_MW_GC1-B_WG_Q1-2019_NP	EV_MW_BC1-A_WG_Q1-2019_NP	EV_MW_BC1-B_WG_Q1-2019_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)		0.075	0.014	0.018	0.042	0.038
	Cadmium (Cd)-Dissolved (ug/L)		0.0077	<0.0050	0.0481	0.0463	0.207
	Calcium (Ca)-Dissolved (mg/L)		102	73.8	101	227	239
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00040	<0.00010	0.00011
	Cobalt (Co)-Dissolved (ug/L)		0.24	<0.10	<0.10	9.72	1.20
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.211	0.028	<0.010	0.112	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	0.000059	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.149	0.0105	0.0372	0.147	0.166
	Magnesium (Mg)-Dissolved (mg/L)		37.5	23.8	59.6	140	163
	Manganese (Mn)-Dissolved (mg/L)		0.153	0.0862	0.00084	0.323	0.0994
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00708	0.00153	0.00309	0.00701	0.0104
	Nickel (Ni)-Dissolved (mg/L)		0.00107	0.00051	0.00764	0.0242	0.00626
	Potassium (K)-Dissolved (mg/L)		5.53	0.884	2.47	5.18	5.72
	Selenium (Se)-Dissolved (ug/L)		0.235	0.418	39.6	97.5	120
	Silicon (Si)-Dissolved (mg/L)		3.32	2.88	2.31	3.24	2.70
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		23.3	2.76	4.49	10.7	9.24
	Strontium (Sr)-Dissolved (mg/L)		1.60	0.134	0.258	0.853	0.819
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	0.000049
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00455	0.00143	0.00384	0.00823	0.0122
	Vanadium (V)-Dissolved (mg/L)		0.00051	0.00074	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0103	<0.0010	0.0025	0.0115	0.0047

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2240671-6 WG 05-MAR-19 15:32 EV_MW_MC1- B_WG_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.043			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	112			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.20			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	9.12			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.143			
	Magnesium (Mg)-Dissolved (mg/L)	38.0			
	Manganese (Mn)-Dissolved (mg/L)	0.423			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00224			
	Nickel (Ni)-Dissolved (mg/L)	0.00060			
	Potassium (K)-Dissolved (mg/L)	3.13			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	4.88			
	Silver (Ag)-Dissolved (mg/L)	0.000016			
	Sodium (Na)-Dissolved (mg/L)	21.7			
	Strontium (Sr)-Dissolved (mg/L)	0.747			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000586			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0011			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Aluminum (Al)-Dissolved	MB-LOR	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2240671-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).



## Reference Information

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

EV\_GWSampling

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4556229							
<b>WG3003969-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	11-MAR-19
<b>WG3003969-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	11-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4552887							
<b>WG3002878-18</b>	<b>DUP</b>	<b>L2240671-6</b>						
Alkalinity, Total (as CaCO3)		362	367		mg/L	1.3	20	08-MAR-19
<b>WG3002878-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	08-MAR-19
<b>WG3002878-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	08-MAR-19
<b>WG3002878-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAR-19
<b>WG3002878-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4554610							
<b>WG3002831-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.3		%		80-120	08-MAR-19
<b>WG3002831-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4560810							
<b>WG3005464-12</b>	<b>LCS</b>							
Bromide (Br)			100.9		%		85-115	13-MAR-19
<b>WG3005464-2</b>	<b>LCS</b>							
Bromide (Br)			102.2		%		85-115	13-MAR-19
<b>WG3005464-6</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	13-MAR-19
<b>WG3005464-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3005464-11</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>WG3005464-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4557810								
<b>WG3004422-2</b> <b>LCS</b>								
Dissolved Organic Carbon			100.1		%		80-120	11-MAR-19
<b>WG3004422-1</b> <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-MAR-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4557810								
<b>WG3004422-2</b> <b>LCS</b>								
Total Organic Carbon			100.9		%		80-120	11-MAR-19
<b>WG3004422-1</b> <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	11-MAR-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch      R4560810								
<b>WG3005464-12</b> <b>LCS</b>								
Chloride (Cl)			99.0		%		90-110	13-MAR-19
<b>WG3005464-2</b> <b>LCS</b>								
Chloride (Cl)			99.0		%		90-110	13-MAR-19
<b>WG3005464-6</b> <b>LCS</b>								
Chloride (Cl)			99.4		%		90-110	13-MAR-19
<b>WG3005464-1</b> <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3005464-11</b> <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>WG3005464-5</b> <b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	13-MAR-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch      R4552887								
<b>WG3002878-18</b> <b>DUP</b>								
Conductivity (@ 25C)		<b>L2240671-6</b>	941		uS/cm	0.4	10	08-MAR-19
		937						
<b>WG3002878-14</b> <b>LCS</b>								
Conductivity (@ 25C)			103.5		%		90-110	08-MAR-19
<b>WG3002878-17</b> <b>LCS</b>								
Conductivity (@ 25C)			101.5		%		90-110	08-MAR-19
<b>WG3002878-13</b> <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAR-19
<b>WG3002878-16</b> <b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-MAR-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4560810</b>							
<b>WG3005464-12</b>	<b>LCS</b>							
Fluoride (F)			99.2		%		90-110	13-MAR-19
<b>WG3005464-2</b>	<b>LCS</b>							
Fluoride (F)			101.0		%		90-110	13-MAR-19
<b>WG3005464-6</b>	<b>LCS</b>							
Fluoride (F)			101.7		%		90-110	13-MAR-19
<b>WG3005464-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3005464-11</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>WG3005464-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-MAR-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4553327</b>							
<b>WG3002536-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.0		%		80-120	08-MAR-19
<b>WG3002536-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-MAR-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4554610</b>							
<b>WG3002831-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	08-MAR-19
Antimony (Sb)-Dissolved			87.7		%		80-120	08-MAR-19
Arsenic (As)-Dissolved			93.8		%		80-120	08-MAR-19
Barium (Ba)-Dissolved			98.6		%		80-120	08-MAR-19
Bismuth (Bi)-Dissolved			97.6		%		80-120	08-MAR-19
Boron (B)-Dissolved			90.9		%		80-120	08-MAR-19
Cadmium (Cd)-Dissolved			102.7		%		80-120	08-MAR-19
Calcium (Ca)-Dissolved			93.8		%		80-120	08-MAR-19
Chromium (Cr)-Dissolved			101.1		%		80-120	08-MAR-19
Cobalt (Co)-Dissolved			98.0		%		80-120	08-MAR-19
Copper (Cu)-Dissolved			94.0		%		80-120	08-MAR-19
Iron (Fe)-Dissolved			94.1		%		80-120	08-MAR-19
Lead (Pb)-Dissolved			95.6		%		80-120	08-MAR-19
Lithium (Li)-Dissolved			93.4		%		80-120	08-MAR-19
Magnesium (Mg)-Dissolved			102.6		%		80-120	08-MAR-19
Manganese (Mn)-Dissolved			100.3		%		80-120	08-MAR-19



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4554610</b>							
<b>WG3002831-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Dissolved			90.9		%		80-120	08-MAR-19
Nickel (Ni)-Dissolved			98.8		%		80-120	08-MAR-19
Potassium (K)-Dissolved			96.8		%		80-120	08-MAR-19
Selenium (Se)-Dissolved			96.4		%		80-120	08-MAR-19
Silicon (Si)-Dissolved			88.5		%		60-140	08-MAR-19
Silver (Ag)-Dissolved			88.9		%		80-120	08-MAR-19
Sodium (Na)-Dissolved			98.1		%		80-120	08-MAR-19
Strontium (Sr)-Dissolved			91.2		%		80-120	08-MAR-19
Thallium (Tl)-Dissolved			94.6		%		80-120	08-MAR-19
Tin (Sn)-Dissolved			88.9		%		80-120	08-MAR-19
Titanium (Ti)-Dissolved			93.1		%		80-120	08-MAR-19
Uranium (U)-Dissolved			97.8		%		80-120	08-MAR-19
Vanadium (V)-Dissolved			100.1		%		80-120	08-MAR-19
Zinc (Zn)-Dissolved			104.2		%		80-120	08-MAR-19
<b>WG3002831-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			0.0028	MB-LOR	mg/L		0.001	08-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-MAR-19



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4554610</b>							
<b>WG3002831-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559489</b>							
<b>WG3004926-6</b>	<b>LCS</b>							
Ammonia as N			93.8		%		85-115	12-MAR-19
<b>WG3004926-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-19
<b>Batch</b>	<b>R4562107</b>							
<b>WG3005374-10</b>	<b>LCS</b>							
Ammonia as N			104.9		%		85-115	12-MAR-19
<b>WG3005374-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4560810</b>							
<b>WG3005464-12</b>	<b>LCS</b>							
Nitrite (as N)			100.2		%		90-110	13-MAR-19
<b>WG3005464-2</b>	<b>LCS</b>							
Nitrite (as N)			100.3		%		90-110	13-MAR-19
<b>WG3005464-6</b>	<b>LCS</b>							
Nitrite (as N)			100.7		%		90-110	13-MAR-19
<b>WG3005464-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3005464-11</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19
<b>WG3005464-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-MAR-19



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4560810							
<b>WG3005464-12</b>	<b>LCS</b>							
Nitrate (as N)			98.8		%		90-110	13-MAR-19
<b>WG3005464-2</b>	<b>LCS</b>							
Nitrate (as N)			98.7		%		90-110	13-MAR-19
<b>WG3005464-6</b>	<b>LCS</b>							
Nitrate (as N)			99.2		%		90-110	13-MAR-19
<b>WG3005464-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3005464-11</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>WG3005464-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-MAR-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4557150							
<b>WG3004186-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	11-MAR-19
<b>WG3004186-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			222		mV		210-230	11-MAR-19
<b>WG3004186-10</b>	<b>DUP</b>	<b>L2240671-5</b>						
ORP		416	407	J	mV	9.7	15	11-MAR-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4552308							
<b>WG3002791-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.4		%		80-120	08-MAR-19
<b>WG3002791-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-MAR-19
<b>PH-CL</b>		<b>Water</b>						
Batch	R4552887							
<b>WG3002878-18</b>	<b>DUP</b>	<b>L2240671-6</b>						
pH		7.84	7.91	J	pH	0.07	0.2	08-MAR-19
<b>WG3002878-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	08-MAR-19
<b>WG3002878-17</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	08-MAR-19
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4549807</b>							
<b>WG3001960-18</b>	<b>DUP</b>	<b>L2240671-6</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-MAR-19
<b>WG3001960-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.9		%		80-120	07-MAR-19
<b>WG3001960-17</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.0		%		80-120	07-MAR-19
<b>WG3001960-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAR-19
<b>WG3001960-4</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAR-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4560810</b>							
<b>WG3005464-12</b>	<b>LCS</b>							
Sulfate (SO4)			99.5		%		90-110	13-MAR-19
<b>WG3005464-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.1		%		90-110	13-MAR-19
<b>WG3005464-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.3		%		90-110	13-MAR-19
<b>WG3005464-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3005464-11</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>WG3005464-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-MAR-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559530</b>							
<b>WG3003851-5</b>	<b>LCS</b>							
Total Dissolved Solids			100.9		%		85-115	11-MAR-19
<b>WG3003851-8</b>	<b>LCS</b>							
Total Dissolved Solids			96.6		%		85-115	11-MAR-19
<b>WG3003851-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	11-MAR-19
<b>WG3003851-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	11-MAR-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4556493</b>							
<b>WG3004011-7</b>	<b>DUP</b>	<b>L2240671-6</b>						
Total Kjeldahl Nitrogen		0.298	0.290		mg/L	2.7	20	08-MAR-19
<b>WG3004011-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.0		%		75-125	08-MAR-19
<b>WG3004011-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.0		%		75-125	08-MAR-19
<b>WG3004011-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAR-19
<b>WG3004011-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-MAR-19
<b>WG3004011-8</b>	<b>MS</b>	<b>L2240671-6</b>						
Total Kjeldahl Nitrogen			93.0		%		70-130	08-MAR-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4562247</b>							
<b>WG3004470-2</b>	<b>LCS</b>							
Total Suspended Solids			108.3		%		85-115	12-MAR-19
<b>WG3004470-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	12-MAR-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4550608</b>							
<b>WG3002121-9</b>	<b>DUP</b>	<b>L2240671-4</b>						
Turbidity		411	418		NTU	1.7	15	07-MAR-19
<b>WG3002121-8</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	07-MAR-19
<b>WG3002121-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-MAR-19

# Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2240671

Report Date: 14-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	05-MAR-19 15:30	11-MAR-19 11:30	0.25	140	hours	EHTR-FM
	2	05-MAR-19 12:30	11-MAR-19 11:30	0.25	143	hours	EHTR-FM
	3	05-MAR-19 14:00	11-MAR-19 11:30	0.25	142	hours	EHTR-FM
	4	05-MAR-19 14:25	11-MAR-19 11:30	0.25	141	hours	EHTR-FM
	5	05-MAR-19 10:15	11-MAR-19 11:30	0.25	145	hours	EHTR-FM
	6	05-MAR-19 15:32	11-MAR-19 11:30	0.25	140	hours	EHTR-FM
pH							
	1	05-MAR-19 15:30	08-MAR-19 09:00	0.25	66	hours	EHTR-FM
	2	05-MAR-19 12:30	08-MAR-19 09:00	0.25	68	hours	EHTR-FM
	3	05-MAR-19 14:00	08-MAR-19 09:00	0.25	67	hours	EHTR-FM
	4	05-MAR-19 14:25	08-MAR-19 09:00	0.25	66	hours	EHTR-FM
	5	05-MAR-19 10:15	08-MAR-19 09:00	0.25	71	hours	EHTR-FM
	6	05-MAR-19 15:32	08-MAR-19 09:00	0.25	66	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	1	05-MAR-19 15:30	13-MAR-19 14:38	3	8	days	EHT
	2	05-MAR-19 12:30	13-MAR-19 14:38	3	8	days	EHT
	3	05-MAR-19 14:00	13-MAR-19 14:38	3	8	days	EHT
	4	05-MAR-19 14:25	13-MAR-19 14:38	3	8	days	EHT
	5	05-MAR-19 10:15	13-MAR-19 14:38	3	8	days	EHT
	6	05-MAR-19 15:32	13-MAR-19 14:38	3	8	days	EHT
Nitrite in Water by IC (Low Level)							
	1	05-MAR-19 15:30	13-MAR-19 14:38	3	8	days	EHT
	2	05-MAR-19 12:30	13-MAR-19 14:38	3	8	days	EHT
	3	05-MAR-19 14:00	13-MAR-19 14:38	3	8	days	EHT
	4	05-MAR-19 14:25	13-MAR-19 14:38	3	8	days	EHT
	5	05-MAR-19 10:15	13-MAR-19 14:38	3	8	days	EHT
	6	05-MAR-19 15:32	13-MAR-19 14:38	3	8	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2240671 were received on 06-MAR-19 09:20.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **EV\_GWSampling\_2019-03-05**

TURNAROUND TIME: **Regular TAT**

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com X X X			
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerik@teck.com X X X			
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	brian.hansen2@srclavalin.com X X X			
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equilonline.com X X X			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-910-8431			Phone Number	403-407-1800			PO number				

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2240671-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-NET-D-VA	TECKCOAL-ROUTINE-VA						
EV_MW_MCI-A_WG_Q1-2019_NP	EV_MW_MCI-A	WG	N	5-Mar-19	15:30	G	5	1	1	1	1	1						
EV_MW_GCI-A_WG_Q1-2019_NP	EV_MW_GCI-A	WG	N	5-Mar-19	12:30	G	5	1	1	1	1	1						
EV_MW_GCI-B_WG_Q1-2019_NP	EV_MW_GCI-B	WG	N	5-Mar-19	14:00	G	5	1	1	1	1	1						
EV_MW_BCI-A_WG_Q1-2019_NP	EV_MW_BCI-A	WG	N	5-Mar-19	14:25	G	5	1	1	1	1	1						
EV_MW_BCI-B_WG_Q1-2019_NP	EV_MW_BCI-B	WG	N	5-Mar-19	10:15	G	5	1	1	1	1	1						
EV_MW_MCI-B_WG_Q1-2019_NP	EV_MW_MCI-B	WG	N	5-Mar-19	15:32	G	5	1	1	1	1	1						

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*[Signature]* 190305/1700 *[Signature]* 2/6 9:20

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	<i>Ryan Schopman</i>	Mobile #	250-551-1142
				Sampler's Signature	<i>[Signature]</i>	Date/Time	2019-03-05

32



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 07-MAR-19  
Report Date: 15-MAR-19 18:40 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2241313  
Project P.O. #: VPO00618734  
Job Reference: REGINAL EFFECTS PROGRAM  
C of C Numbers: EV\_GWSampling  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2241313-1	L2241313-2	L2241313-3	L2241313-4	L2241313-5
					WG	WG	WG	WG	WG
		06-MAR-19	12:35	EV_MW_MC4_WG_Q1-2019_NP	06-MAR-19	06-MAR-19	06-MAR-19	06-MAR-19	06-MAR-19
					14:58	14:58	13:27	10:22	10:22
					EV_MW_MC4_WG_Q1-2019_NP	EV_MW_MC4_WG_Q1-2019_NP	EV_MW_MC3_WG_Q1-2019_NP	EV_MW_AQ1_WG_Q1-2019_NP	EV_MW_AQ1_WG_Q1-2019_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	916	791	703	817	833			
	Hardness (as CaCO3) (mg/L)	500	406	69.3	485	489			
	pH (pH)	7.84	7.94	8.47	7.76	7.55			
	ORP (mV)	392	406	400	396	410			
	Total Suspended Solids (mg/L)	80.5	16.9	56.9	11.1	10.5			
	Total Dissolved Solids (mg/L)	570	453	483	523	523			
	Turbidity (NTU)	71.8	19.1	179	12.2	11.7			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	14.7	8.3	<1.0	6.3	12.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	358	382	354	369	369			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	14.4	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	358	382	369	369	369			
	Ammonia as N (mg/L)	0.0249	0.0917	0.0221	0.0060	<0.0050			
	Bromide (Br) (mg/L)	<0.25	<0.050	<0.050	<0.25	<0.25			
	Chloride (Cl) (mg/L)	33.9	16.9	5.57	31.8	32.0			
	Fluoride (F) (mg/L)	<0.10	0.081	1.95	<0.10	<0.10			
	Ion Balance (%)	99.7	98.7	100	100	101			
	Nitrate (as N) (mg/L)	<0.025 <sup>HTD</sup>	<0.0050 <sup>HTD</sup>	0.0146 <sup>HTD</sup>	0.213 <sup>HTD</sup>	0.214 <sup>HTD</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>HTD</sup>	0.0045 <sup>HTD</sup>	0.0066 <sup>HTD</sup>	<0.0050 <sup>HTD</sup>	0.0104 <sup>HTD</sup>			
	Total Kjeldahl Nitrogen (mg/L)	0.113	0.136	0.251	<0.050	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0024	0.0145	0.0139	0.0141			
	Phosphorus (P)-Total (mg/L)	0.119 <sup>DLHC</sup>	0.0462	0.218 <sup>DLHC</sup>	0.0327	0.0299			
	Sulfate (SO4) (mg/L)	117	50.7	23.1	79.1	78.6			
	Anion Sum (meq/L)	10.5	9.17	8.11	9.93	9.93			
	Cation Sum (meq/L)	10.5	9.05	8.12	9.95	10.0			
	Cation - Anion Balance (%)	-0.2	-0.6	0.0	0.1	0.6			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.35	2.17	1.32	0.52	<0.50		
Total Organic Carbon (mg/L)		1.46	2.37	1.44	0.52	0.57			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	0.313	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00049	0.00057	0.00037	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00295	0.00117	0.00150	0.00015	0.00016			
	Barium (Ba)-Dissolved (mg/L)	0.102	0.307	0.229	0.187	0.182			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2241313-1	L2241313-2	L2241313-3	L2241313-4	L2241313-5
					L2241313-1 WG	L2241313-2 WG	L2241313-3 WG	L2241313-4 WG	L2241313-5 WG
		06-MAR-19	12:35		06-MAR-19	06-MAR-19	06-MAR-19	06-MAR-19	06-MAR-19
					14:58	14:58	13:27	10:22	10:22
					EV_MW_MC4_WG _Q1-2019_NP	EV_MW_SC- A_WG_Q1- 2019_NP	EV_MW_MC3_WG _Q1-2019_NP	EV_MW_AQ1_WG _Q1-2019_NP	EV_MW_AQ1- C_WG_Q1- 2019_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.044	0.035	0.107	0.028	0.027			
	Cadmium (Cd)-Dissolved (ug/L)	0.0091	0.0151	0.0847	0.0580	0.0596			
	Calcium (Ca)-Dissolved (mg/L)	136	104	16.9	116	117			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00040	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.40	0.86	0.18	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.230	0.024	0.127	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000093	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0264	0.0233	0.132	0.0225	0.0231			
	Magnesium (Mg)-Dissolved (mg/L)	39.0	35.2	6.60	47.1	47.9			
	Manganese (Mn)-Dissolved (mg/L)	0.0658	0.451	0.0561	0.0180	0.0185			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000066	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00285	0.00239	0.0313	0.000527	0.000535			
	Nickel (Ni)-Dissolved (mg/L)	0.00264	0.00234	0.00096	0.00059	0.00062			
	Potassium (K)-Dissolved (mg/L)	2.36	2.67	1.14	1.55	1.55			
	Selenium (Se)-Dissolved (ug/L)	0.111	0.533	1.12	3.17	3.29			
	Silicon (Si)-Dissolved (mg/L)	4.96	4.38	3.77	4.26	4.26			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	10.4	19.6	153	5.24	5.24			
	Strontium (Sr)-Dissolved (mg/L)	0.681	0.396	0.129	0.362	0.368			
	Thallium (Tl)-Dissolved (mg/L)	0.000012	0.000021	0.000021	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00243	0.00537	0.00199	0.000499	0.000510			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00122	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0022	<0.0010	0.0013	<0.0010	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2241313-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			



## Reference Information

<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

EV\_GWSampling

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4562167</b>							
<b>WG3005470-3</b>	<b>DUP</b>	<b>L2241313-5</b>						
Acidity (as CaCO3)		12.3	10.7		mg/L	14	20	13-MAR-19
<b>WG3005470-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.6		%		85-115	13-MAR-19
<b>WG3005470-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.2		%		85-115	13-MAR-19
<b>WG3005470-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	13-MAR-19
<b>WG3005470-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	13-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556310</b>							
<b>WG3003987-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	11-MAR-19
<b>WG3003987-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-MAR-19
<b>Batch</b>	<b>R4561649</b>							
<b>WG3005546-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	13-MAR-19
<b>WG3005546-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003905-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.0		%		80-120	11-MAR-19
<b>WG3003905-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	11-MAR-19
<b>WG3003905-4</b>	<b>MS</b>	<b>L2241313-1</b>						
Beryllium (Be)-Dissolved			100.7		%		70-130	11-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4567427</b>							
<b>WG3007290-10</b>	<b>LCS</b>							
Bromide (Br)			103.0		%		85-115	15-MAR-19
<b>WG3007290-2</b>	<b>LCS</b>							
Bromide (Br)			104.9		%		85-115	15-MAR-19
<b>WG3007290-6</b>	<b>LCS</b>							
Bromide (Br)			103.1		%		85-115	15-MAR-19
<b>WG3007290-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4567427</b>							
<b>WG3007290-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-MAR-19
<b>WG3007290-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-MAR-19
<b>WG3007290-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4563547</b>							
<b>WG3006245-3</b>	<b>DUP</b>	<b>L2241313-1</b>						
Dissolved Organic Carbon		1.35	1.37		mg/L	1.1	20	13-MAR-19
<b>WG3006245-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.5		%		80-120	13-MAR-19
<b>WG3006245-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006245-4</b>	<b>MS</b>	<b>L2241313-2</b>						
Dissolved Organic Carbon			113.8		%		70-130	13-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4563547</b>							
<b>WG3006245-3</b>	<b>DUP</b>	<b>L2241313-1</b>						
Total Organic Carbon		1.46	1.38		mg/L	6.0	20	13-MAR-19
<b>WG3006245-2</b>	<b>LCS</b>							
Total Organic Carbon			103.8		%		80-120	13-MAR-19
<b>WG3006245-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-MAR-19
<b>WG3006245-4</b>	<b>MS</b>	<b>L2241313-2</b>						
Total Organic Carbon			106.7		%		70-130	13-MAR-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4567427</b>							
<b>WG3007290-10</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		90-110	15-MAR-19
<b>WG3007290-2</b>	<b>LCS</b>							
Chloride (Cl)			100.8		%		90-110	15-MAR-19
<b>WG3007290-6</b>	<b>LCS</b>							
Chloride (Cl)			99.4		%		90-110	15-MAR-19
<b>WG3007290-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAR-19
<b>WG3007290-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-MAR-19



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4567427							
<b>WG3007290-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	15-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4556310							
<b>WG3003987-14 LCS</b>								
Conductivity (@ 25C)			102.2		%		90-110	11-MAR-19
<b>WG3003987-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	11-MAR-19
Batch	R4561649							
<b>WG3005546-5 LCS</b>								
Conductivity (@ 25C)			97.5		%		90-110	13-MAR-19
<b>WG3005546-4 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4567427							
<b>WG3007290-10 LCS</b>								
Fluoride (F)			98.3		%		90-110	15-MAR-19
<b>WG3007290-2 LCS</b>								
Fluoride (F)			103.9		%		90-110	15-MAR-19
<b>WG3007290-6 LCS</b>								
Fluoride (F)			97.3		%		90-110	15-MAR-19
<b>WG3007290-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	15-MAR-19
<b>WG3007290-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	15-MAR-19
<b>WG3007290-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	15-MAR-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4563670							
<b>WG3004707-3 DUP</b>		<b>L2241313-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	14-MAR-19
<b>WG3004707-2 LCS</b>								
Mercury (Hg)-Dissolved			98.2		%		80-120	14-MAR-19
<b>WG3004707-1 MB</b>								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	14-MAR-19
<b>WG3004707-4 MS</b>		<b>L2241313-2</b>						
Mercury (Hg)-Dissolved			82.4		%		70-130	14-MAR-19



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003905-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			108.7		%		80-120	11-MAR-19
Antimony (Sb)-Dissolved			97.3		%		80-120	11-MAR-19
Arsenic (As)-Dissolved			94.3		%		80-120	11-MAR-19
Barium (Ba)-Dissolved			99.7		%		80-120	11-MAR-19
Bismuth (Bi)-Dissolved			93.2		%		80-120	11-MAR-19
Boron (B)-Dissolved			103.4		%		80-120	11-MAR-19
Cadmium (Cd)-Dissolved			91.9		%		80-120	11-MAR-19
Calcium (Ca)-Dissolved			99.4		%		80-120	11-MAR-19
Chromium (Cr)-Dissolved			97.1		%		80-120	11-MAR-19
Cobalt (Co)-Dissolved			96.3		%		80-120	11-MAR-19
Copper (Cu)-Dissolved			94.9		%		80-120	11-MAR-19
Iron (Fe)-Dissolved			94.7		%		80-120	11-MAR-19
Lead (Pb)-Dissolved			96.1		%		80-120	11-MAR-19
Lithium (Li)-Dissolved			99.4		%		80-120	11-MAR-19
Magnesium (Mg)-Dissolved			104.5		%		80-120	11-MAR-19
Manganese (Mn)-Dissolved			99.2		%		80-120	11-MAR-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	11-MAR-19
Nickel (Ni)-Dissolved			94.3		%		80-120	11-MAR-19
Potassium (K)-Dissolved			98.1		%		80-120	11-MAR-19
Selenium (Se)-Dissolved			90.9		%		80-120	11-MAR-19
Silicon (Si)-Dissolved			103.3		%		60-140	11-MAR-19
Silver (Ag)-Dissolved			96.3		%		80-120	11-MAR-19
Sodium (Na)-Dissolved			101.8		%		80-120	11-MAR-19
Strontium (Sr)-Dissolved			100.2		%		80-120	11-MAR-19
Thallium (Tl)-Dissolved			96.4		%		80-120	11-MAR-19
Tin (Sn)-Dissolved			94.3		%		80-120	11-MAR-19
Titanium (Ti)-Dissolved			98.0		%		80-120	11-MAR-19
Uranium (U)-Dissolved			98.6		%		80-120	11-MAR-19
Vanadium (V)-Dissolved			99.3		%		80-120	11-MAR-19
Zinc (Zn)-Dissolved			88.5		%		80-120	11-MAR-19
<b>WG3003905-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003905-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
<b>WG3003905-4</b>	<b>MS</b>	<b>L2241313-1</b>						
Aluminum (Al)-Dissolved			98.4		%		70-130	11-MAR-19
Antimony (Sb)-Dissolved			104.6		%		70-130	11-MAR-19
Arsenic (As)-Dissolved			108.7		%		70-130	11-MAR-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Bismuth (Bi)-Dissolved			90.8		%		70-130	11-MAR-19
Boron (B)-Dissolved			105.5		%		70-130	11-MAR-19



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3003905-4</b>	<b>MS</b>	<b>L2241313-1</b>						
Cadmium (Cd)-Dissolved			99.1		%		70-130	11-MAR-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Chromium (Cr)-Dissolved			95.7		%		70-130	11-MAR-19
Cobalt (Co)-Dissolved			91.3		%		70-130	11-MAR-19
Copper (Cu)-Dissolved			87.9		%		70-130	11-MAR-19
Iron (Fe)-Dissolved			91.6		%		70-130	11-MAR-19
Lead (Pb)-Dissolved			93.7		%		70-130	11-MAR-19
Lithium (Li)-Dissolved			95.0		%		70-130	11-MAR-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Molybdenum (Mo)-Dissolved			104.6		%		70-130	11-MAR-19
Nickel (Ni)-Dissolved			88.1		%		70-130	11-MAR-19
Potassium (K)-Dissolved			99.2		%		70-130	11-MAR-19
Selenium (Se)-Dissolved			120.5		%		70-130	11-MAR-19
Silicon (Si)-Dissolved			95.8		%		70-130	11-MAR-19
Silver (Ag)-Dissolved			91.8		%		70-130	11-MAR-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	11-MAR-19
Thallium (Tl)-Dissolved			94.1		%		70-130	11-MAR-19
Tin (Sn)-Dissolved			100.4		%		70-130	11-MAR-19
Titanium (Ti)-Dissolved			99.7		%		70-130	11-MAR-19
Uranium (U)-Dissolved			98.9		%		70-130	11-MAR-19
Vanadium (V)-Dissolved			98.8		%		70-130	11-MAR-19
Zinc (Zn)-Dissolved			85.8		%		70-130	11-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4562107</b>							
<b>WG3005374-11</b>	<b>DUP</b>	<b>L2241313-5</b>						
Ammonia as N		<0.0050	0.0076	RPD-NA	mg/L	N/A	20	12-MAR-19
<b>WG3005374-10</b>	<b>LCS</b>							
Ammonia as N			104.9		%		85-115	12-MAR-19
<b>WG3005374-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3005374-12</b>	<b>MS</b>	<b>L2241313-5</b>						
Ammonia as N			117.6		%		75-125	12-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4567427</b>							
<b>WG3007290-10</b>	<b>LCS</b>							
Nitrite (as N)			101.6		%		90-110	15-MAR-19
<b>WG3007290-2</b>	<b>LCS</b>							
Nitrite (as N)			98.9		%		90-110	15-MAR-19
<b>WG3007290-6</b>	<b>LCS</b>							
Nitrite (as N)			98.5		%		90-110	15-MAR-19
<b>WG3007290-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAR-19
<b>WG3007290-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAR-19
<b>WG3007290-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4567427</b>							
<b>WG3007290-10</b>	<b>LCS</b>							
Nitrate (as N)			99.96		%		90-110	15-MAR-19
<b>WG3007290-2</b>	<b>LCS</b>							
Nitrate (as N)			100.4		%		90-110	15-MAR-19
<b>WG3007290-6</b>	<b>LCS</b>							
Nitrate (as N)			99.2		%		90-110	15-MAR-19
<b>WG3007290-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAR-19
<b>WG3007290-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAR-19
<b>WG3007290-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-MAR-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4559712</b>							
<b>WG3004936-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	12-MAR-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4552308</b>							
<b>WG3002791-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.4		%		80-120	08-MAR-19
<b>WG3002791-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-MAR-19
<b>PH-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4556310							
WG3003987-14	LCS							
pH			7.06		pH		6.9-7.1	11-MAR-19
Batch	R4561649							
WG3005546-5	LCS							
pH			7.03		pH		6.9-7.1	13-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4549807							
WG3001960-26	LCS							
Orthophosphate-Dissolved (as P)			103.9		%		80-120	07-MAR-19
WG3001960-30	LCS							
Orthophosphate-Dissolved (as P)			104.0		%		80-120	07-MAR-19
WG3001960-29	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAR-19
WG3001960-7	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	07-MAR-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4567427							
WG3007290-10	LCS							
Sulfate (SO4)			102.0		%		90-110	15-MAR-19
WG3007290-2	LCS							
Sulfate (SO4)			102.7		%		90-110	15-MAR-19
WG3007290-6	LCS							
Sulfate (SO4)			100.8		%		90-110	15-MAR-19
WG3007290-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAR-19
WG3007290-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAR-19
WG3007290-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	15-MAR-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4565448							
WG3005351-5	LCS							
Total Dissolved Solids			106.5		%		85-115	13-MAR-19
WG3005351-4	MB							
Total Dissolved Solids			<10		mg/L		10	13-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4561991</b>							
<b>WG3004758-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.6		%		75-125	11-MAR-19
<b>WG3004758-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.5		%		75-125	11-MAR-19
<b>WG3004758-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.9		%		75-125	11-MAR-19
<b>WG3004758-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.9		%		75-125	11-MAR-19
<b>WG3004758-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.5		%		75-125	11-MAR-19
<b>WG3004758-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>WG3004758-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-MAR-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4564428</b>							
<b>WG3005348-4</b>	<b>LCS</b>							
Total Suspended Solids			102.4		%		85-115	13-MAR-19
<b>WG3005348-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-MAR-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4553372</b>							
<b>WG3002992-12</b>	<b>DUP</b>	<b>L2241313-3</b>						
Turbidity		179	180		NTU	0.6	15	08-MAR-19
<b>WG3002992-11</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	08-MAR-19
<b>WG3002992-8</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	08-MAR-19
<b>WG3002992-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-MAR-19
<b>WG3002992-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-MAR-19

# Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2241313

Report Date: 15-MAR-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	06-MAR-19 12:35	12-MAR-19 11:00	0.25	142	hours	EHTR-FM
	2	06-MAR-19 14:58	12-MAR-19 11:00	0.25	140	hours	EHTR-FM
	3	06-MAR-19 13:27	12-MAR-19 11:00	0.25	142	hours	EHTR-FM
	4	06-MAR-19 10:22	12-MAR-19 11:00	0.25	145	hours	EHTR-FM
	5	06-MAR-19 10:22	12-MAR-19 11:00	0.25	145	hours	EHTR-FM
pH							
	1	06-MAR-19 12:35	11-MAR-19 09:00	0.25	116	hours	EHTR-FM
	2	06-MAR-19 14:58	11-MAR-19 09:00	0.25	114	hours	EHTR-FM
	3	06-MAR-19 13:27	11-MAR-19 09:00	0.25	115	hours	EHTR-FM
	4	06-MAR-19 10:22	13-MAR-19 09:00	0.25	167	hours	EHTR-FM
	5	06-MAR-19 10:22	13-MAR-19 09:00	0.25	167	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)							
	1	06-MAR-19 12:35	15-MAR-19 12:33	3	9	days	EHT
	2	06-MAR-19 14:58	15-MAR-19 12:33	3	9	days	EHT
	3	06-MAR-19 13:27	15-MAR-19 12:33	3	9	days	EHT
	4	06-MAR-19 10:22	15-MAR-19 12:33	3	9	days	EHT
	5	06-MAR-19 10:22	15-MAR-19 12:33	3	9	days	EHT
Nitrite in Water by IC (Low Level)							
	1	06-MAR-19 12:35	15-MAR-19 12:33	3	9	days	EHT
	2	06-MAR-19 14:58	15-MAR-19 12:33	3	9	days	EHT
	3	06-MAR-19 13:27	15-MAR-19 12:33	3	9	days	EHT
	4	06-MAR-19 10:22	15-MAR-19 12:33	3	9	days	EHT
	5	06-MAR-19 10:22	15-MAR-19 12:33	3	9	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
 EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
 EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
 EHT: Exceeded ALS recommended hold time prior to analysis.  
 Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2241313 were received on 07-MAR-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: **EV\_GWSampling 2019-03-06**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	brian.hansen2@sncavalin.com	X	X	X
								Email 4:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-910-8431			Phone Number	403-407-1800			PO number				

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered : F: Field, L: Lab, PL: Field & Lab, N: None



L2241313-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	F	N							
								ALS_Package-DOC	ALS_Package-TRN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA							
EV_MW_MC4_WG_Q1-2019_NP	EV_MW_MC4	WG	N	6-Mar-19	12:35	G	5	1	1	1	1	1							
EV_MW_SC-A_WG_Q1-2019_NP	EV_MW_SC-A	WG	N	6-Mar-19	14:58	G	5	1	1	1	1	1							
EV_MW_MC3_WG_Q1-2019_NP	EV_MW_MC3	WG	N	6-Mar-19	13:27	G	5	1	1	1	1	1							
EV_MW_AQ1_WG_Q1-2019_NP	EV_MW_AQ1	WG	N	6-Mar-19	10:22	G	5	1	1	1	1	1							
EV_MW_AQ1-C_WG_Q1-2019_NP	EV_MW_AQ1-C	WG	N	6-Mar-19	10:22	G	5	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			DK	2019/03/07 0940

SERVICE REQUEST (rush - subject to availability)				
Regular (default) <input checked="" type="checkbox"/>	Sampler's Name		Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

2°C



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 08-MAR-19  
Report Date: 20-MAR-19 18:11 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2241710  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: EV\_GWSampling  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2241710-1 WG 07-MAR-19 12:35 EV_MW_AQ2_WG _Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1110			
	Hardness (as CaCO3) (mg/L)	615			
	pH (pH)	7.61			
	ORP (mV)	410			
	Total Suspended Solids (mg/L)	28.0			
	Total Dissolved Solids (mg/L)	720			
	Turbidity (NTU)	11.2			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	19.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	473			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	473			
	Ammonia as N (mg/L)	0.0742			
	Bromide (Br) (mg/L)	<0.25			
	Chloride (Cl) (mg/L)	13.9			
	Fluoride (F) (mg/L)	0.19			
	Ion Balance (%)	98.2			
	Nitrate (as N) (mg/L)	<0.025 <sup>HTD</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>HTD</sup>			
	Total Kjeldahl Nitrogen (mg/L)	0.110			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0282			
	Sulfate (SO4) (mg/L)	172			
	Anion Sum (meq/L)	13.4			
	Cation Sum (meq/L)	13.2			
	Cation - Anion Balance (%)	-0.9			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.62			
	Total Organic Carbon (mg/L)	0.56			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00014			
	Barium (Ba)-Dissolved (mg/L)	0.0186			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2241710-1 WG 07-MAR-19 12:35 EV_MW_AQ2_WG _Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Boron (B)-Dissolved (mg/L)	0.110			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	146			
	Chromium (Cr)-Dissolved (mg/L)	0.00017			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.609			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0594			
	Magnesium (Mg)-Dissolved (mg/L)	60.5			
	Manganese (Mn)-Dissolved (mg/L)	0.0502			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000422			
	Nickel (Ni)-Dissolved (mg/L)	0.00058			
	Potassium (K)-Dissolved (mg/L)	1.94			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	6.96			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	18.7			
	Strontium (Sr)-Dissolved (mg/L)	1.15			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000098			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2241710-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2241710-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2241710-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2241710-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2241710-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2241710-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2241710-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2241710-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2241710-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

## Reference Information

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

EV\_GWSampling

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4562167</b>							
<b>WG3005470-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.2		%		85-115	13-MAR-19
<b>WG3005470-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	13-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4561649</b>							
<b>WG3005546-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.6		%		85-115	13-MAR-19
<b>WG3005546-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	13-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3004017-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			94.3		%		80-120	11-MAR-19
<b>WG3004017-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	11-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Bromide (Br)			100.3		%		85-115	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Bromide (Br)			107.5		%		85-115	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Bromide (Br)			101.2		%		85-115	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4566407</b>							
<b>WG3006985-11</b>	<b>DUP</b>	<b>L2241710-1</b>						
Dissolved Organic Carbon		0.62	0.56		mg/L	9.6	20	14-MAR-19
<b>WG3006985-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.6		%		80-120	14-MAR-19
<b>WG3006985-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4566407</b>							
<b>WG3006985-11</b>	<b>DUP</b>	<b>L2241710-1</b>						
Total Organic Carbon		0.56	0.60		mg/L	7.1	20	14-MAR-19
<b>WG3006985-10</b>	<b>LCS</b>							
Total Organic Carbon			101.9		%		80-120	14-MAR-19
<b>WG3006985-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-MAR-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Chloride (Cl)			98.1		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Chloride (Cl)			99.0		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Chloride (Cl)			97.7		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Chloride (Cl)			98.1		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-MAR-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4561649</b>							
<b>WG3005546-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	13-MAR-19
<b>WG3005546-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	13-MAR-19



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Fluoride (F)			98.2		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Fluoride (F)			98.8		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Fluoride (F)			90.7		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Fluoride (F)			97.9		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-MAR-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4563670</b>							
<b>WG3004707-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.5		%		80-120	14-MAR-19
<b>WG3004707-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-MAR-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4556788</b>							
<b>WG3004017-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.6		%		80-120	11-MAR-19
Antimony (Sb)-Dissolved			98.2		%		80-120	11-MAR-19
Arsenic (As)-Dissolved			94.6		%		80-120	11-MAR-19
Barium (Ba)-Dissolved			99.5		%		80-120	11-MAR-19
Bismuth (Bi)-Dissolved			95.5		%		80-120	11-MAR-19
Boron (B)-Dissolved			96.1		%		80-120	11-MAR-19
Cadmium (Cd)-Dissolved			95.9		%		80-120	11-MAR-19
Calcium (Ca)-Dissolved			96.7		%		80-120	11-MAR-19
Chromium (Cr)-Dissolved			95.3		%		80-120	11-MAR-19
Cobalt (Co)-Dissolved			94.7		%		80-120	11-MAR-19
Copper (Cu)-Dissolved			95.7		%		80-120	11-MAR-19
Iron (Fe)-Dissolved			93.5		%		80-120	11-MAR-19



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3004017-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			96.7		%		80-120	11-MAR-19
Lithium (Li)-Dissolved			93.1		%		80-120	11-MAR-19
Magnesium (Mg)-Dissolved			97.7		%		80-120	11-MAR-19
Manganese (Mn)-Dissolved			96.4		%		80-120	11-MAR-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	11-MAR-19
Nickel (Ni)-Dissolved			93.5		%		80-120	11-MAR-19
Potassium (K)-Dissolved			93.6		%		80-120	11-MAR-19
Selenium (Se)-Dissolved			97.7		%		80-120	11-MAR-19
Silicon (Si)-Dissolved			97.6		%		60-140	11-MAR-19
Silver (Ag)-Dissolved			96.6		%		80-120	11-MAR-19
Sodium (Na)-Dissolved			101.7		%		80-120	11-MAR-19
Strontium (Sr)-Dissolved			100.0		%		80-120	11-MAR-19
Thallium (Tl)-Dissolved			96.8		%		80-120	11-MAR-19
Tin (Sn)-Dissolved			95.9		%		80-120	11-MAR-19
Titanium (Ti)-Dissolved			92.4		%		80-120	11-MAR-19
Uranium (U)-Dissolved			94.6		%		80-120	11-MAR-19
Vanadium (V)-Dissolved			98.1		%		80-120	11-MAR-19
Zinc (Zn)-Dissolved			95.1		%		80-120	11-MAR-19
<b>WG3004017-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-MAR-19





## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4556788</b>							
<b>WG3004017-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4563772</b>							
<b>WG3006312-10</b>	<b>LCS</b>							
Ammonia as N			100.2		%		85-115	13-MAR-19
<b>WG3006312-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4558317</b>							
<b>WG3004569-12</b>	<b>LCS</b>							
Nitrite (as N)			100.8		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Nitrite (as N)			101.1		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
Batch	R4558317							
<b>WG3004569-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-MAR-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4558317							
<b>WG3004569-12</b>	<b>LCS</b>							
Nitrate (as N)			97.6		%		90-110	12-MAR-19
<b>WG3004569-2</b>	<b>LCS</b>							
Nitrate (as N)			98.8		%		90-110	12-MAR-19
<b>WG3004569-6</b>	<b>LCS</b>							
Nitrate (as N)			97.4		%		90-110	12-MAR-19
<b>WG3004569-9</b>	<b>LCS</b>							
Nitrate (as N)			97.9		%		90-110	12-MAR-19
<b>WG3004569-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-11</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>WG3004569-8</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-MAR-19
<b>ORP-CL</b>								
Batch	R4562807							
<b>WG3005942-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	13-MAR-19
<b>P-T-L-COL-CL</b>								
Batch	R4558569							
<b>WG3004693-4</b>	<b>LCS</b>							
Phosphorus (P)-Total			92.6		%		80-120	12-MAR-19
<b>WG3004693-3</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	12-MAR-19
<b>PH-CL</b>								
Batch	R4561649							
<b>WG3005546-11</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	13-MAR-19



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch R4553449								
<b>WG3003016-2 LCS</b>								
Orthophosphate-Dissolved (as P)			100.6		%		80-120	08-MAR-19
<b>WG3003016-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-MAR-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch R4558317								
<b>WG3004569-12 LCS</b>								
Sulfate (SO4)			101.0		%		90-110	12-MAR-19
<b>WG3004569-2 LCS</b>								
Sulfate (SO4)			100.5		%		90-110	12-MAR-19
<b>WG3004569-6 LCS</b>								
Sulfate (SO4)			99.3		%		90-110	12-MAR-19
<b>WG3004569-9 LCS</b>								
Sulfate (SO4)			100.7		%		90-110	12-MAR-19
<b>WG3004569-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-11 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>WG3004569-8 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	12-MAR-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch R4567763								
<b>WG3006261-2 LCS</b>								
Total Dissolved Solids			100.9		%		85-115	14-MAR-19
<b>WG3006261-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	14-MAR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch R4560867								
<b>WG3004594-2 LCS</b>								
Total Kjeldahl Nitrogen			92.7		%		75-125	12-MAR-19
<b>WG3004594-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4567677							
<b>WG3006296-2 LCS</b>								
Total Suspended Solids			113.3		%		85-115	14-MAR-19
<b>WG3006296-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	14-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4553372							
<b>WG3002992-17 LCS</b>								
Turbidity			96.0		%		85-115	08-MAR-19
<b>WG3002992-16 MB</b>								
Turbidity			<0.10		NTU		0.1	08-MAR-19

# Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2241710

Report Date: 20-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	07-MAR-19 12:35	13-MAR-19 14:45	0.25	146	hours	EHTR-FM
pH	1	07-MAR-19 12:35	13-MAR-19 09:00	0.25	140	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	1	07-MAR-19 12:35	19-MAR-19 20:06	3	12	days	EHT
Nitrite in Water by IC (Low Level)	1	07-MAR-19 12:35	19-MAR-19 20:06	3	12	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

Notes\*:  
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2241710 were received on 08-MAR-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.


Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **EV\_GWSampling\_2019-03-07**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	brian.hansen2@snclavalin.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	teckcoal@equisonline.com			X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-910-8431			Phone Number	403-407-1800			PO number				

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA									
 L2241710-COFC																					
EV_MW_AQ2_WG_Q1-2019_NP	EV_MW_AQ2	WG	N	7-Mar-19	12:35	G	5	1	1	1	1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>JD</i>	3/8 900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge	<i>Jennifer de Werk</i>	March 7, 2019
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS		

8



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 14-MAR-19  
Report Date: 22-MAR-19 18:01 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2244185  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190313GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2244185-1	L2244185-2	L2244185-3		
		Description	WG	WG	WG		
		Sampled Date	13-MAR-19	13-MAR-19	13-MAR-19		
		Sampled Time	15:10	15:15	15:15		
		Client ID	EV_BALGW_WG_2019-03-13_NP	EV_MCGWD_WG_2019-03-13_NP	EV_MCGWD_WG_2019-03-13_FB-HG		
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0				
	Conductivity (@ 25C) (uS/cm)	775	546				
	Hardness (as CaCO3) (mg/L)	362	240				
	pH (pH)	7.69	8.08				
	ORP (mV)	469	309				
	Total Suspended Solids (mg/L)	54.3	94.6				
	Total Dissolved Solids (mg/L)	506	315				
	Turbidity (NTU)	37.3	48.8				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.8	4.0				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	340	240				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	340	240				
	Ammonia as N (mg/L)	0.0167	0.118				
	Bromide (Br) (mg/L)	<0.050	<0.050				
	Chloride (Cl) (mg/L)	1.69	4.86				
	Fluoride (F) (mg/L)	0.305	1.08				
	Ion Balance (%)	96.8	97.2				
	Nitrate (as N) (mg/L)	0.0375	0.0730				
	Nitrite (as N) (mg/L)	0.0013	0.0243				
	Total Kjeldahl Nitrogen (mg/L)	0.224	0.299				
	Total Nitrogen (mg/L)	0.263	0.396				
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018	0.0032				
	Phosphorus (P)-Total Dissolved (mg/L)	0.0029	0.0047				
	Phosphorus (P)-Total (mg/L)	0.0351	0.0623				
	Sulfate (SO4) (mg/L)	106	52.9				
	Anion Sum (meq/L)	9.06	6.10				
	Cation Sum (meq/L)	8.77	5.93				
Cation - Anion Balance (%)	-1.6	-1.4					
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.06	1.19				
	Total Organic Carbon (mg/L)	2.54	1.20				
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	LAB	LAB			
	Dissolved Metals Filtration Location	FIELD	FIELD				
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0050				
	Antimony (Sb)-Dissolved (mg/L)	0.00013	0.00013				
	Arsenic (As)-Dissolved (mg/L)	0.00017	0.00059				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2244185-1	L2244185-2	L2244185-3		
		Description	WG	WG	WG		
		Sampled Date	13-MAR-19	13-MAR-19	13-MAR-19		
		Sampled Time	15:10	15:15	15:15		
		Client ID	EV_BALGW_WG_2019-03-13_NP	EV_MCGWD_WG_2019-03-13_NP	EV_MCGWD_WG_2019-03-13_FB-HG		
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0327	0.0711			
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)		0.179	0.075			
	Cadmium (Cd)-Dissolved (ug/L)		0.0098	0.0724			
	Calcium (Ca)-Dissolved (mg/L)		92.1	53.0			
	Chromium (Cr)-Dissolved (mg/L)		0.00036	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)		0.16	0.26			
	Copper (Cu)-Dissolved (mg/L)		0.00184	0.00213			
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.014			
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)		0.119	0.0092			
	Magnesium (Mg)-Dissolved (mg/L)		32.0	26.1			
	Manganese (Mn)-Dissolved (mg/L)		0.0116	0.215			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050				
	Mercury (Hg)-Dissolved (ug/L)			<0.00050	<0.00050		
	Molybdenum (Mo)-Dissolved (mg/L)		0.000677	0.0142			
	Nickel (Ni)-Dissolved (mg/L)		0.00144	0.00524			
	Potassium (K)-Dissolved (mg/L)		2.67	1.51			
	Selenium (Se)-Dissolved (ug/L)		0.663	0.152			
	Silicon (Si)-Dissolved (mg/L)		4.37	4.84			
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)		33.9	24.8			
	Strontium (Sr)-Dissolved (mg/L)		2.26	0.502			
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	0.000059			
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)		0.000152	0.00249			
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0042	0.0171			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2244185-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2244185-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time			

## Reference Information

of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190313GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573472</b>							
<b>WG3010407-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.9		%		85-115	20-MAR-19
<b>WG3010407-18</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	20-MAR-19
<b>WG3010407-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-MAR-19
<b>WG3010407-17</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	20-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568644</b>							
<b>WG3008501-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			94.8		%		85-115	18-MAR-19
<b>WG3008501-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4569125</b>							
<b>WG3007552-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			90.7		%		80-120	15-MAR-19
<b>WG3007552-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-MAR-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568170</b>							
<b>WG3007991-2</b>	<b>LCS</b>							
Bromide (Br)			98.9		%		85-115	16-MAR-19
Bromide (Br)			98.9		%		85-115	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-MAR-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4573347</b>							
<b>WG3010382-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.3		%		80-120	20-MAR-19
<b>WG3010382-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-MAR-19
<b>Batch</b>	<b>R4579791</b>							
<b>WG3012539-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.6		%		80-120	22-MAR-19
<b>WG3012539-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4579791							
<b>WG3012539-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	22-MAR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4579791							
<b>WG3012539-2 LCS</b>								
Total Organic Carbon			89.2		%		80-120	22-MAR-19
<b>WG3012539-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	22-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4568170							
<b>WG3007991-2 LCS</b>								
Chloride (Cl)			101.1		%		90-110	16-MAR-19
Chloride (Cl)			101.1		%		90-110	16-MAR-19
<b>WG3007991-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	16-MAR-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4567289							
<b>WG3007284-3 DUP</b>		<b>L2244185-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	15-MAR-19
<b>WG3007284-2 LCS</b>								
Colour, True			101.0		%		85-115	15-MAR-19
<b>WG3007284-1 MB</b>								
Colour, True			<5.0		CU		5	15-MAR-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4568644							
<b>WG3008501-8 LCS</b>								
Conductivity (@ 25C)			100.7		%		90-110	18-MAR-19
<b>WG3008501-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	18-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4568170							
<b>WG3007991-2 LCS</b>								
Fluoride (F)			106.4		%		90-110	16-MAR-19
Fluoride (F)			106.4		%		90-110	16-MAR-19
<b>WG3007991-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	16-MAR-19



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4570191</b>							
<b>WG3007625-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.3		%		80-120	19-MAR-19
<b>WG3007625-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-MAR-19
<b>HG-D-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4577490</b>							
<b>WG3011046-3</b>	<b>DUP</b>	<b>L2244185-2</b>						
Mercury (Hg)-Dissolved		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	21-MAR-19
<b>WG3011046-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.0		%		80-120	21-MAR-19
<b>WG3011538-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.0		%		80-120	21-MAR-19
<b>WG3011046-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	21-MAR-19
<b>WG3011538-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	21-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4569125</b>							
<b>WG3007552-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			93.7		%		80-120	15-MAR-19
Antimony (Sb)-Dissolved			95.0		%		80-120	15-MAR-19
Arsenic (As)-Dissolved			96.1		%		80-120	15-MAR-19
Barium (Ba)-Dissolved			92.7		%		80-120	15-MAR-19
Bismuth (Bi)-Dissolved			95.0		%		80-120	15-MAR-19
Boron (B)-Dissolved			90.4		%		80-120	15-MAR-19
Cadmium (Cd)-Dissolved			94.5		%		80-120	15-MAR-19
Calcium (Ca)-Dissolved			91.5		%		80-120	15-MAR-19
Chromium (Cr)-Dissolved			95.7		%		80-120	15-MAR-19
Cobalt (Co)-Dissolved			94.5		%		80-120	15-MAR-19
Copper (Cu)-Dissolved			93.8		%		80-120	15-MAR-19
Iron (Fe)-Dissolved			94.8		%		80-120	15-MAR-19
Lead (Pb)-Dissolved			94.3		%		80-120	15-MAR-19
Lithium (Li)-Dissolved			91.8		%		80-120	15-MAR-19
Magnesium (Mg)-Dissolved			95.7		%		80-120	15-MAR-19
Manganese (Mn)-Dissolved			99.1		%		80-120	15-MAR-19
Molybdenum (Mo)-Dissolved			95.9		%		80-120	15-MAR-19





## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4569125</b>							
<b>WG3007552-2</b>	<b>LCS</b>							
Nickel (Ni)-Dissolved			94.3		%		80-120	15-MAR-19
Potassium (K)-Dissolved			92.1		%		80-120	15-MAR-19
Selenium (Se)-Dissolved			101.2		%		80-120	15-MAR-19
Silicon (Si)-Dissolved			88.0		%		60-140	15-MAR-19
Silver (Ag)-Dissolved			92.1		%		80-120	15-MAR-19
Sodium (Na)-Dissolved			99.8		%		80-120	15-MAR-19
Strontium (Sr)-Dissolved			93.8		%		80-120	15-MAR-19
Thallium (Tl)-Dissolved			93.9		%		80-120	15-MAR-19
Tin (Sn)-Dissolved			93.6		%		80-120	15-MAR-19
Titanium (Ti)-Dissolved			92.0		%		80-120	15-MAR-19
Uranium (U)-Dissolved			91.4		%		80-120	15-MAR-19
Vanadium (V)-Dissolved			98.2		%		80-120	15-MAR-19
Zinc (Zn)-Dissolved			94.3		%		80-120	15-MAR-19
<b>WG3007552-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-MAR-19



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4569125</b>							
<b>WG3007552-1</b>	<b>MB</b>	<b>NP</b>						
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-MAR-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4576610</b>							
<b>WG3011068-2</b>	<b>LCS</b>							
Ammonia as N			108.9		%		85-115	20-MAR-19
<b>WG3011068-6</b>	<b>LCS</b>							
Ammonia as N			101.7		%		85-115	20-MAR-19
<b>WG3011068-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-19
<b>WG3011068-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	20-MAR-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568170</b>							
<b>WG3007991-2</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	16-MAR-19
Nitrite (as N)			104.3		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-MAR-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4568170</b>							
<b>WG3007991-2</b>	<b>LCS</b>							
Nitrate (as N)			100.1		%		90-110	16-MAR-19
Nitrate (as N)			100.1		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-MAR-19
<b>ORP-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL Water</b>								
Batch	R4571747							
WG3009715-3	CRM	CL-ORP						
ORP			224		mV		210-230	19-MAR-19
WG3009715-5	CRM	CL-ORP						
ORP			223		mV		210-230	19-MAR-19
<b>P-T-L-COL-CL Water</b>								
Batch	R4568177							
WG3008005-19	DUP	L2244185-1						
Phosphorus (P)-Total		0.0351	0.0370		mg/L	5.4	20	17-MAR-19
WG3008005-6	LCS							
Phosphorus (P)-Total			97.7		%		80-120	17-MAR-19
WG3008005-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-MAR-19
WG3008005-20	MS	L2244185-1						
Phosphorus (P)-Total			110.3		%		70-130	17-MAR-19
<b>P-TD-L-COL-CL Water</b>								
Batch	R4568177							
WG3008005-19	DUP	L2244185-1						
Phosphorus (P)-Total Dissolved		0.0029	0.0032		mg/L	9.8	20	17-MAR-19
WG3008005-6	LCS							
Phosphorus (P)-Total Dissolved			97.7		%		80-120	17-MAR-19
WG3008005-5	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	17-MAR-19
WG3008005-20	MS	L2244185-1						
Phosphorus (P)-Total Dissolved			88.6		%		70-130	17-MAR-19
<b>PH-CL Water</b>								
Batch	R4568644							
WG3008501-8	LCS							
pH			7.03		pH		6.9-7.1	18-MAR-19
<b>PO4-DO-L-COL-CL Water</b>								
Batch	R4564447							
WG3005680-26	LCS							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	14-MAR-19
WG3005680-7	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-MAR-19
<b>SO4-IC-N-CL Water</b>								



## Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4568170							
<b>WG3007991-2</b>	<b>LCS</b>							
Sulfate (SO4)			102.7		%		90-110	16-MAR-19
Sulfate (SO4)			102.7		%		90-110	16-MAR-19
<b>WG3007991-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	16-MAR-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4576969							
<b>WG3010105-2</b>	<b>LCS</b>							
Total Dissolved Solids			105.5		%		85-115	20-MAR-19
<b>WG3010105-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-MAR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4574290							
<b>WG3010655-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	18-MAR-19
<b>WG3010655-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.4		%		75-125	18-MAR-19
<b>WG3010655-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	18-MAR-19
<b>WG3010655-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>WG3010655-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	18-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4573311							
<b>WG3009094-11</b>	<b>LCS</b>							
Total Suspended Solids			95.7		%		85-115	19-MAR-19
<b>WG3009094-10</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	19-MAR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4565449							
<b>WG3006698-41</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	14-MAR-19
<b>WG3006698-40</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-MAR-19

# Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2244185

Report Date: 22-MAR-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	13-MAR-19 15:10	19-MAR-19 10:00	0.25	139	hours	EHTR-FM
	2	13-MAR-19 15:15	19-MAR-19 10:00	0.25	139	hours	EHTR-FM
pH	1	13-MAR-19 15:10	18-MAR-19 09:00	0.25	114	hours	EHTR-FM
	2	13-MAR-19 15:15	18-MAR-19 09:00	0.25	114	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2244185 were received on 14-MAR-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: **20190313GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO			LABORATORY				OTHER INFO		
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	FDD
Job Description	Q1 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	lyshvets@teck.com	<input type="checkbox"/>	<input type="checkbox"/>
Project Manager	Cameron Griffin		Email	lyudmyla.shvets@alsglobal.com		Email 2:	teckcoj@esgsonline.com	<input type="checkbox"/>	<input type="checkbox"/>
Email	Cameron.Griffin@Teck.com		Address	2559 29 St NE,		Email 3:	kimberley.hackett@teck.com	<input type="checkbox"/>	<input type="checkbox"/>
Address	RR#1 HWY# 3					Email 4:	cameron.griffin@teck.com	<input type="checkbox"/>	<input type="checkbox"/>
						Email 5:	tecklab.alerts@pharvacoinf.teck.com	<input type="checkbox"/>	<input type="checkbox"/>
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	538790
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada		
Phone Number	1-250-865-5289		Phone Number	403 291 9897					

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	ANALYSIS REQUESTED											
								Na	NO	Yes	Yes	Yes	No	No	No	No	No	Yes	
								TECK COAL-ROUTINE-VA (ESIX.1)	True Colour	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen (or BC (NO2 and NO3))	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	
EV_BALgw_WG_2019-01_NP	EV_BALgw	WG	N	3/13/2019	15:10	G	5											1	
EV_MCgwD_WG_2019-01_NP	EV_MCgwD	WG	N	3/13/2019	15:15	G	5												
EV_MCgwD_WG_2019-01_FB-HG	EV_MCgwD	WG	N	3/13/2019	15:15	G	1												
Total							11												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELIQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	March 13, 2019		3/14 8:45

NO OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency < 1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett			March 13, 2019

40



L2244185-COFC



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 07-MAY-19  
Report Date: 15-MAY-19 09:10 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2268579  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190506Q2GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

15-MAY-19 09:10 (MT)

Version: FINAL

		Sample ID	L2268579-1	L2268579-2	L2268579-3	L2268579-4	L2268579-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	06-MAY-19	06-MAY-19	06-MAY-19	06-MAY-19	06-MAY-19
		Sampled Time	10:15	10:20	10:25	10:10	12:35
		Client ID	EV_EC5GW_WG_2019-04_NP	EV_EC6GW_WG_2019-04_NP	EV_EC7GW_WG_2019-04_NP	EV_GV3GW_WG_2019-04_NP	EV_BALGW_WG_2019-04_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)	605	<2.0	<2.0	589	726	
	Hardness (as CaCO3) (mg/L)	336	<0.50	<0.50	335	343	
	pH (pH)	8.30	5.43	5.35	7.99	7.90	
	ORP (mV)	376	365	437	415	458	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	4.7	
	Total Dissolved Solids (mg/L)	388 <sup>DLHC</sup>	<10	<10	393 <sup>DLHC</sup>	448 <sup>DLHC</sup>	
	Turbidity (NTU)	<0.10	<0.10	<0.10	<0.10	2.82	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.8	1.7	1.8	2.6	3.4	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	205	<1.0	<1.0	199	339	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	205	<1.0	<1.0	199	339	
	Ammonia as N (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0071	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	
	Chloride (Cl) (mg/L)	1.59	<0.50	<0.50	1.62	1.71	
	Fluoride (F) (mg/L)	0.511	<0.020	<0.020	0.517	0.242	
	Ion Balance (%)	96.3	0.0	0.0	97.6	94.1	
	Nitrate (as N) (mg/L)	0.129	<0.0050	<0.0050	0.130	0.0366	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	0.089	0.073	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0011	<0.0010	<0.0010	0.0017	0.0018	
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0025	0.0083 <sup>RRV</sup>	
	Sulfate (SO4) (mg/L)	142	<0.30	<0.30	142	94.8	
	Anion Sum (meq/L)	7.13	<0.10	<0.10	7.02	8.81	
	Cation Sum (meq/L)	6.87	<0.10	<0.10	6.85	8.29	
	Cation - Anion Balance (%)	-1.9	0.0	0.0	-1.2	-3.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.63	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.34	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
	Barium (Ba)-Dissolved (mg/L)	0.0172	<0.00010	<0.00010	0.0170	0.0313	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2268579-6 WG 06-MAY-19 15:00 EV_RCSGW_WG_ 2019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	2380			
	Hardness (as CaCO3) (mg/L)	1570			
	pH (pH)	7.64			
	ORP (mV)	419			
	Total Suspended Solids (mg/L)	2.1			
	Total Dissolved Solids (mg/L)	2200 <sup>DLHC</sup>			
	Turbidity (NTU)	0.60			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	11.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	259			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	259			
	Ammonia as N (mg/L)	<0.0050 <sup>DLHC</sup>			
	Bromide (Br) (mg/L)	0.56 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	17.8 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.19 <sup>DLHC</sup>			
	Ion Balance (%)	90.4 <sup>DLHC</sup>			
	Nitrate (as N) (mg/L)	38.2 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<0.050 <sup>TKNI</sup>			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0031			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0027			
	Phosphorus (P)-Total (mg/L)	0.0026 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	1290			
	Anion Sum (meq/L)	35.2			
	Cation Sum (meq/L)	31.9			
	Cation - Anion Balance (%)	-5.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.36			
	Total Organic Carbon (mg/L)	1.26			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030 <sup>DLA</sup>			
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>			
	Arsenic (As)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>			
	Barium (Ba)-Dissolved (mg/L)	0.0372			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2268579-1 WG 06-MAY-19 10:15 EV_EC5GW_WG_ 2019-04_NP	L2268579-2 WG 06-MAY-19 10:20 EV_EC6GW_WG_ 2019-04_NP	L2268579-3 WG 06-MAY-19 10:25 EV_EC7GW_WG_ 2019-04_NP	L2268579-4 WG 06-MAY-19 10:10 EV_GV3GW_WG_ 2019-04_NP	L2268579-5 WG 06-MAY-19 12:35 EV_BALGW_WG_ 2019-04_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.012	<0.010	<0.010	0.013	0.179
	Cadmium (Cd)-Dissolved (ug/L)	0.0058	<0.0050	<0.0050	0.0066	0.0077
	Calcium (Ca)-Dissolved (mg/L)	85.9	<0.050	<0.050	84.3	91.3
	Chromium (Cr)-Dissolved (mg/L)	0.00021	<0.00010	<0.00010	0.00021	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00091
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	0.010	0.027
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0152	<0.0010	<0.0010	0.0151	0.113
	Magnesium (Mg)-Dissolved (mg/L)	29.5	<0.10	<0.10	30.2	27.9
	Manganese (Mn)-Dissolved (mg/L)	0.00011	<0.00010	<0.00010	0.00018	0.00630
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00102	<0.000050	<0.000050	0.00103	0.000293
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00057
	Potassium (K)-Dissolved (mg/L)	0.955	<0.050	<0.050	0.972	2.56
	Selenium (Se)-Dissolved (ug/L)	4.10	<0.050	<0.050	3.70	0.184
	Silicon (Si)-Dissolved (mg/L)	3.43	<0.050	<0.050	3.35	4.72
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.12	<0.050	<0.050	3.16	31.6
	Strontium (Sr)-Dissolved (mg/L)	0.584	<0.00020	<0.00020	0.586	2.38
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00185	<0.000010	<0.000010	0.00186	0.000136
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0017

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2268579-6 WG 06-MAY-19 15:00 EV_RCSGW_WG_ 2019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	DLA <0.040			
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.00010			
	Boron (B)-Dissolved (mg/L)	DLA <0.020			
	Cadmium (Cd)-Dissolved (ug/L)	0.257			
	Calcium (Ca)-Dissolved (mg/L)	354			
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.00020			
	Cobalt (Co)-Dissolved (ug/L)	DLA <0.20			
	Copper (Cu)-Dissolved (mg/L)	0.0617			
	Iron (Fe)-Dissolved (mg/L)	DLA <0.020			
	Lead (Pb)-Dissolved (mg/L)	0.00032			
	Lithium (Li)-Dissolved (mg/L)	0.0593			
	Magnesium (Mg)-Dissolved (mg/L)	168			
	Manganese (Mn)-Dissolved (mg/L)	0.00221			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00136			
	Nickel (Ni)-Dissolved (mg/L)	0.0032			
	Potassium (K)-Dissolved (mg/L)	3.20			
	Selenium (Se)-Dissolved (ug/L)	220			
	Silicon (Si)-Dissolved (mg/L)	4.45			
	Silver (Ag)-Dissolved (mg/L)	DLA <0.000020			
	Sodium (Na)-Dissolved (mg/L)	7.21			
	Strontium (Sr)-Dissolved (mg/L)	0.410			
	Thallium (Tl)-Dissolved (mg/L)	DLA <0.000020			
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00020			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00752			
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0010			
	Zinc (Zn)-Dissolved (mg/L)	0.194			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2268579-2	EV_EC6GW_WG_2019-04_1	SFPL	Sample was Filtered and Preserved at the laboratory - DOC, DIS METALS LAB FILTERED/PRESERVED

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2268579-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by			

## Reference Information

subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**COLOUR-TRUE-CL** Water Colour (True) by Spectrometer APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation redution potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190506Q2GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4630886							
<b>WG3046959-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.0		%		85-115	10-MAY-19
<b>WG3046959-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	10-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4633250							
<b>WG3047929-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	10-MAY-19
<b>WG3047929-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4629091							
<b>WG3044978-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	09-MAY-19
<b>WG3044978-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4628106							
<b>WG3044326-6</b>	<b>LCS</b>							
Bromide (Br)			106.8		%		85-115	07-MAY-19
<b>WG3044326-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4631431							
<b>WG3047613-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			93.8		%		80-120	11-MAY-19
<b>WG3047613-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4631431							
<b>WG3047613-6</b>	<b>LCS</b>							
Total Organic Carbon			100.6		%		80-120	11-MAY-19
<b>WG3047613-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	11-MAY-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
Batch	R4628106							
<b>WG3044326-6</b>	<b>LCS</b>							
Chloride (Cl)			102.5		%		90-110	07-MAY-19
<b>WG3044326-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-MAY-19
<b>COLOUR-TRUE-CL</b>								
Batch	R4626451							
<b>WG3043747-3</b>	<b>DUP</b>	<b>L2268579-6</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	07-MAY-19
<b>WG3043747-2</b>	<b>LCS</b>							
Colour, True			99.98		%		85-115	07-MAY-19
<b>WG3043747-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	07-MAY-19
<b>EC-L-PCT-CL</b>								
Batch	R4633250							
<b>WG3047929-9</b>	<b>DUP</b>	<b>L2268579-1</b>						
Conductivity (@ 25C)		605	607		uS/cm	0.3	10	10-MAY-19
<b>WG3047929-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.2		%		90-110	10-MAY-19
<b>WG3047929-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	10-MAY-19
<b>F-IC-N-CL</b>								
Batch	R4628106							
<b>WG3044326-6</b>	<b>LCS</b>							
Fluoride (F)			107.0		%		90-110	07-MAY-19
<b>WG3044326-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-MAY-19
<b>HG-D-CVAA-VA</b>								
Batch	R4630750							
<b>WG3045837-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.7		%		80-120	10-MAY-19
<b>WG3045837-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-MAY-19
<b>MET-D-CCMS-VA</b>								
Batch	R4629091							
<b>WG3044978-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			86.0		%		80-120	09-MAY-19
Antimony (Sb)-Dissolved			100.3		%		80-120	09-MAY-19



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4629091</b>							
<b>WG3044978-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			84.2		%		80-120	09-MAY-19
Barium (Ba)-Dissolved			90.7		%		80-120	09-MAY-19
Bismuth (Bi)-Dissolved			104.0		%		80-120	09-MAY-19
Boron (B)-Dissolved			98.9		%		80-120	09-MAY-19
Cadmium (Cd)-Dissolved			83.2		%		80-120	09-MAY-19
Calcium (Ca)-Dissolved			100.1		%		80-120	09-MAY-19
Chromium (Cr)-Dissolved			83.4		%		80-120	09-MAY-19
Cobalt (Co)-Dissolved			84.9		%		80-120	09-MAY-19
Copper (Cu)-Dissolved			84.1		%		80-120	09-MAY-19
Iron (Fe)-Dissolved			85.9		%		80-120	09-MAY-19
Lead (Pb)-Dissolved			99.0		%		80-120	09-MAY-19
Lithium (Li)-Dissolved			94.9		%		80-120	09-MAY-19
Magnesium (Mg)-Dissolved			83.7		%		80-120	09-MAY-19
Manganese (Mn)-Dissolved			83.5		%		80-120	09-MAY-19
Molybdenum (Mo)-Dissolved			101.3		%		80-120	09-MAY-19
Nickel (Ni)-Dissolved			84.2		%		80-120	09-MAY-19
Potassium (K)-Dissolved			89.3		%		80-120	09-MAY-19
Selenium (Se)-Dissolved			91.6		%		80-120	09-MAY-19
Silicon (Si)-Dissolved			99.3		%		60-140	09-MAY-19
Silver (Ag)-Dissolved			100.7		%		80-120	09-MAY-19
Sodium (Na)-Dissolved			91.8		%		80-120	09-MAY-19
Strontium (Sr)-Dissolved			98.5		%		80-120	09-MAY-19
Thallium (Tl)-Dissolved			100.3		%		80-120	09-MAY-19
Tin (Sn)-Dissolved			87.3		%		80-120	09-MAY-19
Titanium (Ti)-Dissolved			85.5		%		80-120	09-MAY-19
Uranium (U)-Dissolved			99.0		%		80-120	09-MAY-19
Vanadium (V)-Dissolved			88.2		%		80-120	09-MAY-19
Zinc (Zn)-Dissolved			80.9		%		80-120	09-MAY-19
<b>WG3044978-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-MAY-19



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4629091</b>							
<b>WG3044978-1</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4631441</b>							
<b>WG3047629-3</b>	<b>DUP</b>	<b>L2268579-6</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	12-MAY-19
<b>WG3047629-2</b>	<b>LCS</b>							
Ammonia as N			100.3		%		85-115	12-MAY-19
<b>WG3047629-6</b>	<b>LCS</b>							
Ammonia as N			103.7		%		85-115	12-MAY-19
<b>WG3047629-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-MAY-19



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4631441							
WG3047629-5	MB							
Ammonia as N			<0.0050		mg/L		0.005	12-MAY-19
WG3047629-4	MS	L2268579-6						
Ammonia as N			93.0		%		75-125	12-MAY-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4628106							
WG3044326-6	LCS							
Nitrite (as N)			106.0		%		90-110	07-MAY-19
WG3044326-5	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	07-MAY-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4628106							
WG3044326-6	LCS							
Nitrate (as N)			101.8		%		90-110	07-MAY-19
WG3044326-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-MAY-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4630273							
WG3045912-3	CRM	CL-ORP						
ORP			226		mV		210-230	09-MAY-19
WG3045912-4	DUP	L2268579-5						
ORP		458	459	J	mV	0.1	15	09-MAY-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4633090							
WG3048451-32	DUP	L2268579-6						
Phosphorus (P)-Total		0.0026	<0.0020	RPD-NA	mg/L	N/A	20	13-MAY-19
WG3048451-30	LCS							
Phosphorus (P)-Total			101.6		%		80-120	13-MAY-19
WG3048451-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	13-MAY-19
WG3048451-31	MS	L2268579-6						
Phosphorus (P)-Total			90.8		%		70-130	13-MAY-19
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
Batch	R4633090							
WG3048451-32	DUP	L2268579-6						
Phosphorus (P)-Total Dissolved		0.0027	<0.0020	RPD-NA	mg/L	N/A	20	13-MAY-19
WG3048451-30	LCS							



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4633090</b>							
<b>WG3048451-30</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		101.6		%		80-120	13-MAY-19
<b>WG3048451-29</b>	<b>MB</b>							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	13-MAY-19
<b>WG3048451-31</b>	<b>MS</b>	<b>L2268579-6</b>						
Phosphorus (P)-Total	Dissolved		88.6		%		70-130	13-MAY-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4633250</b>							
<b>WG3047929-9</b>	<b>DUP</b>	<b>L2268579-1</b>						
pH		8.30	8.31	J	pH	0.01	0.2	10-MAY-19
<b>WG3047929-8</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	10-MAY-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4629111</b>							
<b>WG3044829-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	08-MAY-19
<b>WG3044829-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-MAY-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4628106</b>							
<b>WG3044326-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.4		%		90-110	07-MAY-19
<b>WG3044326-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-MAY-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4630819</b>							
<b>WG3045301-5</b>	<b>LCS</b>							
Total Dissolved Solids			98.5		%		85-115	09-MAY-19
<b>WG3045301-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	09-MAY-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4634306</b>							
<b>WG3048885-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.1		%		75-125	13-MAY-19
<b>WG3048885-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.2		%		75-125	13-MAY-19
<b>WG3048885-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4634306</b>							
<b>WG3048885-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.9		%		75-125	13-MAY-19
<b>WG3048885-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-19
<b>WG3048885-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-19
<b>WG3048885-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-MAY-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4630822</b>							
<b>WG3045205-4</b>	<b>LCS</b>							
Total Suspended Solids			93.2		%		85-115	09-MAY-19
<b>WG3045205-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	09-MAY-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4628909</b>							
<b>WG3044789-6</b>	<b>DUP</b>	<b>L2268579-5</b>						
Turbidity		2.82	2.90		NTU	2.8	15	08-MAY-19
<b>WG3044789-5</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	08-MAY-19
<b>WG3044789-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-MAY-19

# Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2268579

Report Date: 15-MAY-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	06-MAY-19 10:15	09-MAY-19 14:10	0.25	76	hours	EHTR-FM
	2	06-MAY-19 10:20	09-MAY-19 14:10	0.25	76	hours	EHTR-FM
	3	06-MAY-19 10:25	09-MAY-19 14:10	0.25	76	hours	EHTR-FM
	4	06-MAY-19 10:10	09-MAY-19 14:10	0.25	76	hours	EHTR-FM
	5	06-MAY-19 12:35	09-MAY-19 14:10	0.25	74	hours	EHTR-FM
	6	06-MAY-19 15:00	09-MAY-19 14:10	0.25	71	hours	EHTR-FM
pH							
	1	06-MAY-19 10:15	10-MAY-19 09:00	0.25	95	hours	EHTR-FM
	2	06-MAY-19 10:20	10-MAY-19 09:00	0.25	95	hours	EHTR-FM
	3	06-MAY-19 10:25	10-MAY-19 09:00	0.25	95	hours	EHTR-FM
	4	06-MAY-19 10:10	10-MAY-19 09:00	0.25	95	hours	EHTR-FM
	5	06-MAY-19 12:35	10-MAY-19 09:00	0.25	92	hours	EHTR-FM
	6	06-MAY-19 15:00	10-MAY-19 09:00	0.25	90	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2268579 were received on 07-MAY-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 2019050602GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name/ Job#	Exlucis Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q3 Ground Water Sampling	Lab Contact	London In Shires	Email 1:	brayn.olyden@teck.com
Project Manager	Camaron Griffin	Address	1500-15th Street SW, Calgary, AB T2C 0L8	Email 2:	tecklab@teck.com
Email	cameron.griffin@teck.com	City	Calgary	Email 3:	linh.nguyen@teck.com
Address	RR#1, HWY#3	Postal Code	T1Y 7H5	Email 4:	cameron.griffin@teck.com
City	Spawwood	Province	BC	Email 5:	tecklab@teck.com
Postal Code	V1C 4C3	Country	Canada	PO #	VPC00618MS2
Phone Number	1-250-516-5289	Phone Number	1-403-291-9897		

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	True Colour		DOC (APHA 5310)		Dissolved Phosphorus		TKN/TOC (APHA 4500-NORG)		Total Nitrogen for BC (NO2 and NO3)		T-ULTRA MERCURY (SW6020)		D-ULTRA MERCURY (SW6020)		EPH (C10-C32)		D-Mercury
								Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
EV_EC3gw_WG_201904_NP	EV_EC3gw	WG	N	5/6/2019	10:15	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_EC6gw_WG_201904_NP	EV_EC6gw	WG	N	5/7/2019	10:20	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_EC7gw_WG_201904_NP	EV_EC7gw	WG	N	5/8/2019	10:25	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_GV9gw_WG_201904_NP	EV_GV9gw	WG	N	5/9/2019	10:10	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_BALgw_WG_201904_NP	EV_BALgw	WG	N	5/10/2019	12:35	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_RC3gw_WG_201904_NP	EV_RC3gw	WG	N	5/11/2019	15:00	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total							30																	

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**  
 Thirst-free Mercury samples are unfiltered and unspiked  
 Total Methyl Mercury samples are preserved but unfiltered  
 Total Selenium samples are preserved but unfiltered  
 Dissolved Selenium samples are preserved and filtered  
 EV\_EC6gw\_WG\_201904\_NP was not field filtered or preserved for dissolved

**APPROVED BY/VALIDATION**  
 Kim Hackett  
 Date/Time: May 6, 2019

**ACCEPTED BY/VALIDATION**  
 [Signature]  
 Date/Time: May 6, 2019

**NO OF BOTTLES RETURNED/DESCRIPTION**

Regular (default)	X
Priority (2-3 business days - 50% surcharge)	
Emergency (1 business day - 100% surcharge)	
For Fingerprint: <input type="checkbox"/> Day, <input type="checkbox"/> After or Weekend, <input type="checkbox"/> Contact ALS	

Sampler's Name: [Signature]  
 Sampler's Signature: [Signature]  
 Kim Hackett  
 Mobile #:  
 Date/Time: May 6, 2019



fc



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 09-MAY-19  
Report Date: 17-MAY-19 11:47 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2270688  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20192508Q2GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2270688-1	L2270688-2	L2270688-3	L2270688-4	L2270688-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	08-MAY-19	08-MAY-19	08-MAY-19	08-MAY-19	08-MAY-19
		Sampled Time	13:00	12:50	11:10	10:50	10:50
		Client ID	EV_ER1GWS_WG_2019-04_NP	EV_ER1GWD_WG_2019-04_NP	EV_MCGWS_WG_2019-04_NP	EV_MCGWD_WG_2019-04_NP	EV_MCGWD_WG_2019-04_FB-HG
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	5.5	<5.0	
	Conductivity (@ 25C) (uS/cm)		567	461	849	551	
	Hardness (as CaCO3) (mg/L)		270	238	361	234	
	pH (pH)		8.33	8.32	8.13	8.28	
	ORP (mV)		418	495	434	411	
	Total Suspended Solids (mg/L)		<1.0	7.5	8.4	23.0	
	Total Dissolved Solids (mg/L)		326 <sup>DLHC</sup>	260 <sup>DLHC</sup>	504 <sup>DLHC</sup>	294 <sup>DLHC</sup>	
	Turbidity (NTU)		0.23	2.88	27.2	19.2	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		3.4	3.0	6.3	4.2	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		175	175	255	235	
	Alkalinity, Carbonate (as CaCO3) (mg/L)		2.0	1.6	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)		177	177	255	235	
	Ammonia as N (mg/L)		<0.0050	0.0216	0.138	0.145	
	Bromide (Br) (mg/L)		0.088	<0.050	0.148	0.051	
	Chloride (Cl) (mg/L)		17.3	5.06	35.5	4.14	
	Fluoride (F) (mg/L)		0.181	0.231	0.451	1.00	
	Ion Balance (%)		96.3	100	99.0	97.4	
	Nitrate (as N) (mg/L)		1.81	1.22	0.0058	0.0070	
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	0.0028	0.0041	
	Total Kjeldahl Nitrogen (mg/L)		0.23	<0.20	0.33	0.29	
	Total Nitrogen (mg/L)		2.04	1.22	0.34	0.31	
	Orthophosphate-Dissolved (as P) (mg/L)		0.0025	0.0022	<0.0010	0.0020	
	Phosphorus (P)-Total Dissolved (mg/L)		0.0025	0.0022	<0.0020	0.0055	
	Phosphorus (P)-Total (mg/L)		0.0033	0.0072	0.0083	0.0274	
	Sulfate (SO4) (mg/L)		89.2	54.4	154	59.2	
	Anion Sum (meq/L)		6.02	4.91	9.32	6.11	
	Cation Sum (meq/L)		5.79	4.92	9.23	5.95	
	Cation - Anion Balance (%)		-1.9	0.1	-0.5	-1.3	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.52	0.66	1.50	1.49	
	Total Organic Carbon (mg/L)		0.75	0.59	1.39	1.39	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	LAB	LAB	LAB
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	0.0098	<0.0030	0.0176	
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00010	
	Arsenic (As)-Dissolved (mg/L)		0.00011	0.00011	0.00113	0.00080	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2270688-1 WG 08-MAY-19 13:00 EV_ER1GWS_WG_2019-04_NP	L2270688-2 WG 08-MAY-19 12:50 EV_ER1GWD_WG_2019-04_NP	L2270688-3 WG 08-MAY-19 11:10 EV_MCGWS_WG_2019-04_NP	L2270688-4 WG 08-MAY-19 10:50 EV_MCGWD_WG_2019-04_NP	L2270688-5 WG 08-MAY-19 10:50 EV_MCGWD_WG_2019-04_FB-HG	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.114	0.0779	0.0241	0.0671	
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.025	0.069	
	Cadmium (Cd)-Dissolved (ug/L)	0.0126	<0.0050	<0.0050	0.0121	
	Calcium (Ca)-Dissolved (mg/L)	71.8	60.1	91.3	50.5	
	Chromium (Cr)-Dissolved (mg/L)	0.00029	0.00059	<0.00010	0.00015	
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.11	0.58	
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00063	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	1.76	0.213	
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0077	0.0067	0.0214	0.0082	
	Magnesium (Mg)-Dissolved (mg/L)	22.2	21.4	32.3	26.2	
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.00155	0.130	0.371	
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050			
	Mercury (Hg)-Dissolved (ug/L)			<0.00050	<0.00050	<0.00050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000910	0.00136	0.00276	0.0141	
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.00129	0.00528	
	Potassium (K)-Dissolved (mg/L)	0.802	0.605	1.67	1.50	
	Selenium (Se)-Dissolved (ug/L)	11.2	7.28	0.052	0.073	
	Silicon (Si)-Dissolved (mg/L)	2.44	2.86	5.26	4.86	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	8.50	3.26	42.7	27.5	
	Strontium (Sr)-Dissolved (mg/L)	0.213	0.195	0.329	0.476	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	0.000020	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00109	0.00133	0.00199	0.00261	
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0063	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2270688-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2270688-1, -2, -3, -4
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2270688-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2270688-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2270688-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2270688-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
<p>True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-D-U-CVAF-VA</b>	Water	Diss. Mercury in Water by CVAFS (Ultra)	APHA 3030 B / EPA 1631 REV. E
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-F-CL</b>	Water	Total Kjeldahl Nitrogen by Fluorescence	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20192508Q2GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4635515</b>							
<b>WG3050440-3</b>	<b>DUP</b>	<b>L2270688-2</b>						
Acidity (as CaCO3)		3.0	2.9		mg/L	4.1	20	15-MAY-19
<b>WG3050440-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.7		%		85-115	15-MAY-19
<b>WG3050440-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	15-MAY-19
<b>Batch</b>	<b>R4636618</b>							
<b>WG3051277-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.0		%		85-115	15-MAY-19
<b>WG3051277-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	15-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4635450</b>							
<b>WG3050091-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.8		%		85-115	14-MAY-19
<b>WG3050091-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-MAY-19
<b>Batch</b>	<b>R4636590</b>							
<b>WG3051280-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			95.1		%		85-115	15-MAY-19
<b>WG3051280-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4633493</b>							
<b>WG3048492-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			90.4		%		80-120	13-MAY-19
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4631153</b>							
<b>WG3047327-2</b>	<b>LCS</b>							
Bromide (Br)			104.3		%		85-115	10-MAY-19
<b>WG3047327-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4637024							
<b>WG3052398-5</b>	<b>LCS</b>							
Dissolved Organic Carbon			109.2		%		80-120	16-MAY-19
<b>WG3052398-4</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-MAY-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4637024							
<b>WG3052398-5</b>	<b>LCS</b>							
Total Organic Carbon			105.7		%		80-120	16-MAY-19
<b>WG3052398-4</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-2</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		90-110	10-MAY-19
<b>WG3047327-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	10-MAY-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4630426							
<b>WG3046390-2</b>	<b>LCS</b>							
Colour, True			101.1		%		85-115	10-MAY-19
<b>WG3046390-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	10-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4635450							
<b>WG3050091-20</b>	<b>LCS</b>							
Conductivity (@ 25C)			104.0		%		90-110	14-MAY-19
<b>WG3050091-19</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-MAY-19
Batch	R4636590							
<b>WG3051280-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			104.7		%		90-110	15-MAY-19
<b>WG3051280-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Batch R4631153</b>								
<b>WG3047327-2</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	10-MAY-19
<b>WG3047327-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-MAY-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4635213</b>								
<b>WG3049539-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.1		%		80-120	15-MAY-19
<b>WG3049539-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-MAY-19
<b>HG-D-U-CVAF-VA</b>								
<b>Batch R4636498</b>								
<b>WG3051855-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.4		%		80-120	16-MAY-19
<b>WG3051855-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	16-MAY-19
<b>WG3051855-3</b>	<b>MS</b>	<b>L2270688-3</b>						
Mercury (Hg)-Dissolved			88.5		%		70-130	16-MAY-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4633493</b>								
<b>WG3048492-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.7		%		80-120	13-MAY-19
Antimony (Sb)-Dissolved			93.7		%		80-120	13-MAY-19
Arsenic (As)-Dissolved			98.0		%		80-120	13-MAY-19
Barium (Ba)-Dissolved			94.7		%		80-120	13-MAY-19
Bismuth (Bi)-Dissolved			89.5		%		80-120	13-MAY-19
Boron (B)-Dissolved			88.1		%		80-120	13-MAY-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	13-MAY-19
Calcium (Ca)-Dissolved			91.4		%		80-120	13-MAY-19
Chromium (Cr)-Dissolved			100.0		%		80-120	13-MAY-19
Cobalt (Co)-Dissolved			99.2		%		80-120	13-MAY-19
Copper (Cu)-Dissolved			96.9		%		80-120	13-MAY-19
Iron (Fe)-Dissolved			92.1		%		80-120	13-MAY-19
Lead (Pb)-Dissolved			91.0		%		80-120	13-MAY-19
Lithium (Li)-Dissolved			88.4		%		80-120	13-MAY-19
Magnesium (Mg)-Dissolved			101.8		%		80-120	13-MAY-19



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4633493</b>							
<b>WG3048492-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			100.6		%		80-120	13-MAY-19
Molybdenum (Mo)-Dissolved			93.6		%		80-120	13-MAY-19
Nickel (Ni)-Dissolved			98.5		%		80-120	13-MAY-19
Potassium (K)-Dissolved			99.3		%		80-120	13-MAY-19
Selenium (Se)-Dissolved			99.2		%		80-120	13-MAY-19
Silicon (Si)-Dissolved			103.4		%		60-140	13-MAY-19
Silver (Ag)-Dissolved			91.7		%		80-120	13-MAY-19
Sodium (Na)-Dissolved			102.7		%		80-120	13-MAY-19
Strontium (Sr)-Dissolved			95.4		%		80-120	13-MAY-19
Thallium (Tl)-Dissolved			91.4		%		80-120	13-MAY-19
Tin (Sn)-Dissolved			94.2		%		80-120	13-MAY-19
Titanium (Ti)-Dissolved			95.6		%		80-120	13-MAY-19
Uranium (U)-Dissolved			96.4		%		80-120	13-MAY-19
Vanadium (V)-Dissolved			100.1		%		80-120	13-MAY-19
Zinc (Zn)-Dissolved			105.1		%		80-120	13-MAY-19
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-19



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4633493</b>							
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4636109</b>							
<b>WG3051247-6</b>	<b>LCS</b>							
Ammonia as N			88.2		%		85-115	15-MAY-19
<b>WG3051247-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	15-MAY-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4631153</b>							
<b>WG3047327-2</b>	<b>LCS</b>							
Nitrite (as N)			105.0		%		90-110	10-MAY-19
<b>WG3047327-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-MAY-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4631153</b>							
<b>WG3047327-2</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	10-MAY-19
<b>WG3047327-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-MAY-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4635113</b>							
<b>WG3050043-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	14-MAY-19



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4636502							
<b>WG3051587-14 LCS</b>								
Phosphorus (P)-Total			103.9		%		80-120	16-MAY-19
<b>WG3051587-13 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4636502							
<b>WG3051587-14 LCS</b>								
Phosphorus (P)-Total Dissolved			103.9		%		80-120	16-MAY-19
<b>WG3051587-13 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4635450							
<b>WG3050091-20 LCS</b>								
pH			7.00		pH		6.9-7.1	14-MAY-19
Batch	R4636590							
<b>WG3051280-5 LCS</b>								
pH			6.99		pH		6.9-7.1	15-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4630586							
<b>WG3045960-18 LCS</b>								
Orthophosphate-Dissolved (as P)			97.4		%		80-120	09-MAY-19
<b>WG3045960-17 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	09-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-2 LCS</b>								
Sulfate (SO4)			102.1		%		90-110	10-MAY-19
<b>WG3047327-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	10-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4636718							
<b>WG3049110-11 LCS</b>								
Total Dissolved Solids			95.7		%		85-115	15-MAY-19
<b>WG3049110-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	15-MAY-19



## Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4636142</b>							
<b>WG3051214-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.7		%		75-125	15-MAY-19
<b>WG3051214-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.3		%		75-125	15-MAY-19
<b>WG3051214-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.7		%		75-125	15-MAY-19
<b>WG3051214-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.9		%		75-125	15-MAY-19
<b>WG3051214-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.0		%		75-125	15-MAY-19
<b>WG3051214-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	15-MAY-19
<b>WG3051214-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	15-MAY-19
<b>WG3051214-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	15-MAY-19
<b>WG3051214-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	15-MAY-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4635780</b>							
<b>WG3049025-26</b>	<b>LCS</b>							
Total Suspended Solids			94.4		%		85-115	14-MAY-19
<b>WG3049025-25</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	14-MAY-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4631265</b>							
<b>WG3047201-12</b>	<b>DUP</b>	<b>L2270688-2</b>						
Turbidity		2.88	3.03		NTU	5.1	15	10-MAY-19
<b>WG3047201-11</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	10-MAY-19
<b>WG3047201-14</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	10-MAY-19
<b>WG3047201-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-MAY-19
<b>WG3047201-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-MAY-19

# Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2270688

Report Date: 17-MAY-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	08-MAY-19 13:00	14-MAY-19 12:05	0.25	143	hours	EHTR-FM
	2	08-MAY-19 12:50	14-MAY-19 12:05	0.25	143	hours	EHTR-FM
	3	08-MAY-19 11:10	14-MAY-19 12:45	0.25	146	hours	EHTR-FM
	4	08-MAY-19 10:50	14-MAY-19 12:45	0.25	146	hours	EHTR-FM
pH	1	08-MAY-19 13:00	14-MAY-19 09:00	0.25	140	hours	EHTR-FM
	2	08-MAY-19 12:50	14-MAY-19 09:00	0.25	140	hours	EHTR-FM
	3	08-MAY-19 11:10	15-MAY-19 09:00	0.25	166	hours	EHTR-FM
	4	08-MAY-19 10:50	15-MAY-19 09:00	0.25	166	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2270688 were received on 09-MAY-19 10:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 20190508 Q2GW

TURNAROUND TIME:

RUSH:

<b>LABORATORY</b> Lab Name: ALS Calgary Lab Contact: Lyndyale Shivers Email: lyndyale.shivers@ngl.com Address: 539 29 St NE		<b>OTHER INFO</b> Report Format / Distribution: Excel PDF EDD Email 1: bryan.stanford@teck.com Email 2: tecklab@teck.com Email 3: kimberly.khachatryan@teck.com Email 4: kimberly.khachatryan@teck.com Email 5: tecklab@teck.com PO #: YPO06010882	
<b>LABORATORY</b> Lab Name: ALS Calgary Lab Contact: Lyndyale Shivers Email: lyndyale.shivers@ngl.com Address: 539 29 St NE		<b>LABORATORY</b> Lab Name: ALS Calgary Lab Contact: Lyndyale Shivers Email: lyndyale.shivers@ngl.com Address: 539 29 St NE	

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED													
								TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury			
EV_ERL1p6S_WG_2019-04_NP	EV_ERL1p6S	WG	N	5/8/2019	13:00	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_ERL1p4D_WG_2019-04_NP	EV_ERL1p4D	WG	N	5/8/2019	12:50	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_M1Cp6S_WG_2019-04_NP	EV_M1Cp6S	WG	N	5/8/2019	11:10	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_M1Cp4D_WG_2019-04_NP	EV_M1Cp4D	WG	N	5/8/2019	10:50	G	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EV_M1Cp4D_WG_2019-04_EP_HG	EV_M1Cp4D	WG	N	5/8/2019	10:50	G	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Total</b>							21														

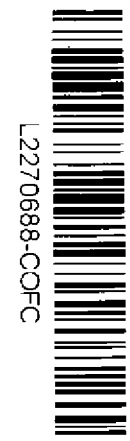
**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:**  
 Ultra-pure Mercury samples are unfiltered and unpreserved  
 Total Methyl Mercury samples are preserved but unfiltered  
 Total Selenium samples are preserved but unfiltered  
 Dissolved Selenium samples are preserved and filtered

**REGULAR RETURN/NO SPECIFICATION**

Priority: (2-3 business days) - 50% surcharge  
 Emergency: (1 business day) - 100% surcharge  
 For Emergencies: 24 Day, ASAP or Weekend - Contact ALS

Regular (default)  X  
 Emergencies (1 business day) - 100% surcharge  
 For Emergencies: 24 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Kim Hackett  
 Sampler's Signature: *Kim Hackett*  
 Date/Time: May 8, 2019



7°C

12345



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 10-MAY-19  
Report Date: 17-MAY-19 16:04 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2270956  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190509Q2GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2270956-1	L2270956-2	L2270956-3
		Description	WG	WG	WG
		Sampled Date	09-MAY-19	09-MAY-19	09-MAY-19
		Sampled Time	14:20	09:30	11:15
		Client ID	EV_BCGW_WG_2 019-04_NP	EV_LSGW_WG_20 19-04_NP	EV_GCGW_WG_2 019-04_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)	954	957	449	
	Hardness (as CaCO3) (mg/L)	519	527	227	
	pH (pH)	8.19	8.27	8.21	
	ORP (mV)	455	365	411	
	Total Suspended Solids (mg/L)	1.5	8.5	3.8	
	Total Dissolved Solids (mg/L)	671 <sup>DLHC</sup>	539 <sup>DLHC</sup>	278 <sup>DLHC</sup>	
	Turbidity (NTU)	1.26	31.1	3.50	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	10.1	13.6	3.9	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	198	481	169	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	198	481	169	
	Ammonia as N (mg/L)	<0.0050	0.139	0.0267	
	Bromide (Br) (mg/L)	0.708	0.059	<0.050	
	Chloride (Cl) (mg/L)	8.64	8.48	4.56	
	Fluoride (F) (mg/L)	0.153	0.269	0.462	
	Ion Balance (%)	98.1	97.8	97.1	
	Nitrate (as N) (mg/L)	5.12	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.234 <sup>TKNI</sup>	0.223	<0.050	
	Total Nitrogen (mg/L)	5.35	0.223	<0.050	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0032	<0.0010	<0.0010	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0029	0.0142	<0.0020	
	Phosphorus (P)-Total (mg/L)	0.0039	0.0214	0.0033	
	Sulfate (SO4) (mg/L)	301	75.9	65.3	
	Anion Sum (meq/L)	10.9	11.4	4.89	
	Cation Sum (meq/L)	10.6	11.2	4.75	
Cation - Anion Balance (%)	-1.0	-1.1	-1.5		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	1.82	<0.50	
	Total Organic Carbon (mg/L)	<0.50	1.86	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00012	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00011	0.00121	0.00190	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2270956-1	L2270956-2	L2270956-3
		Description	WG	WG	WG
		Sampled Date	09-MAY-19	09-MAY-19	09-MAY-19
		Sampled Time	14:20	09:30	11:15
		Client ID	EV_BCGW_WG_2 019-04_NP	EV_LSGW_WG_20 19-04_NP	EV_GCGW_WG_2 019-04_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0450	0.173	0.0672
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.016	0.032	0.012
	Cadmium (Cd)-Dissolved (ug/L)		0.0453	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		118	96.7	61.0
	Chromium (Cr)-Dissolved (mg/L)		0.00017	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	1.24	0.20
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	2.69	0.188
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0312	0.0499	0.0070
	Magnesium (Mg)-Dissolved (mg/L)		54.5	69.5	18.2
	Manganese (Mn)-Dissolved (mg/L)		0.00021	1.04	0.0939
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000893	0.00237	0.00232
	Nickel (Ni)-Dissolved (mg/L)		0.00053	0.00417	0.00066
	Potassium (K)-Dissolved (mg/L)		1.42	3.12	0.712
	Selenium (Se)-Dissolved (ug/L)		38.5	0.104	<0.050
	Silicon (Si)-Dissolved (mg/L)		3.03	4.00	4.21
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		5.60	8.70	3.93
	Strontium (Sr)-Dissolved (mg/L)		0.240	0.443	0.254
	Thallium (Tl)-Dissolved (mg/L)		0.000015	0.000035	0.000022
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00177	0.00188	0.00114
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0017	0.0016	0.0017

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2270956-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2270956-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2270956-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2270956-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2270956-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C.			

## Reference Information

The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20190509Q2GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4636618							
<b>WG3051277-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.0		%		85-115	15-MAY-19
<b>WG3051277-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	15-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4636590							
<b>WG3051280-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.2		%		85-115	15-MAY-19
<b>WG3051280-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4633493							
<b>WG3048492-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			90.4		%		80-120	13-MAY-19
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-6</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	10-MAY-19
<b>WG3047327-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4637537							
<b>WG3052922-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.9		%		80-120	17-MAY-19
<b>WG3052922-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4637537							
<b>WG3052922-6</b>	<b>LCS</b>							
Total Organic Carbon			108.0		%		80-120	17-MAY-19
<b>WG3052922-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	17-MAY-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4631153</b>								
<b>WG3047327-6</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	10-MAY-19
<b>WG3047327-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	10-MAY-19
<b>COLOUR-TRUE-CL</b>								
<b>Batch R4630706</b>								
<b>WG3046609-3</b>	<b>DUP</b>	<b>L2270956-3</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	10-MAY-19
<b>WG3046609-2</b>	<b>LCS</b>							
Colour, True			101.8		%		85-115	10-MAY-19
<b>WG3046609-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	10-MAY-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4636590</b>								
<b>WG3051280-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.9		%		90-110	15-MAY-19
<b>WG3051280-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-MAY-19
<b>F-IC-N-CL</b>								
<b>Batch R4631153</b>								
<b>WG3047327-6</b>	<b>LCS</b>							
Fluoride (F)			105.7		%		90-110	10-MAY-19
<b>WG3047327-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-MAY-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4635213</b>								
<b>WG3049539-3</b>	<b>DUP</b>	<b>L2270956-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	15-MAY-19
<b>WG3049539-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.1		%		80-120	15-MAY-19
<b>WG3049539-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	15-MAY-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4633493</b>								
<b>WG3048492-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.7		%		80-120	13-MAY-19
			93.7		%		80-120	13-MAY-19



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4633493</b>							
<b>WG3048492-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			98.0		%		80-120	13-MAY-19
Barium (Ba)-Dissolved			94.7		%		80-120	13-MAY-19
Bismuth (Bi)-Dissolved			89.5		%		80-120	13-MAY-19
Boron (B)-Dissolved			88.1		%		80-120	13-MAY-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	13-MAY-19
Calcium (Ca)-Dissolved			91.4		%		80-120	13-MAY-19
Chromium (Cr)-Dissolved			100.0		%		80-120	13-MAY-19
Cobalt (Co)-Dissolved			99.2		%		80-120	13-MAY-19
Copper (Cu)-Dissolved			96.9		%		80-120	13-MAY-19
Iron (Fe)-Dissolved			92.1		%		80-120	13-MAY-19
Lead (Pb)-Dissolved			91.0		%		80-120	13-MAY-19
Lithium (Li)-Dissolved			88.4		%		80-120	13-MAY-19
Magnesium (Mg)-Dissolved			101.8		%		80-120	13-MAY-19
Manganese (Mn)-Dissolved			100.6		%		80-120	13-MAY-19
Molybdenum (Mo)-Dissolved			93.6		%		80-120	13-MAY-19
Nickel (Ni)-Dissolved			98.5		%		80-120	13-MAY-19
Potassium (K)-Dissolved			99.3		%		80-120	13-MAY-19
Selenium (Se)-Dissolved			99.2		%		80-120	13-MAY-19
Silicon (Si)-Dissolved			103.4		%		60-140	13-MAY-19
Silver (Ag)-Dissolved			91.7		%		80-120	13-MAY-19
Sodium (Na)-Dissolved			102.7		%		80-120	13-MAY-19
Strontium (Sr)-Dissolved			95.4		%		80-120	13-MAY-19
Thallium (Tl)-Dissolved			91.4		%		80-120	13-MAY-19
Tin (Sn)-Dissolved			94.2		%		80-120	13-MAY-19
Titanium (Ti)-Dissolved			95.6		%		80-120	13-MAY-19
Uranium (U)-Dissolved			96.4		%		80-120	13-MAY-19
Vanadium (V)-Dissolved			100.1		%		80-120	13-MAY-19
Zinc (Zn)-Dissolved			105.1		%		80-120	13-MAY-19
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4633493</b>							
<b>WG3048492-1</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4636109</b>							
<b>WG3051247-10</b>	<b>LCS</b>							
Ammonia as N			87.5		%		85-115	15-MAY-19
<b>WG3051247-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	15-MAY-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-6</b>	<b>LCS</b>							
Nitrite (as N)			106.1		%		90-110	10-MAY-19
<b>WG3047327-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-MAY-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-6</b>	<b>LCS</b>							
Nitrate (as N)			102.2		%		90-110	10-MAY-19
<b>WG3047327-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4635113							
<b>WG3050043-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	14-MAY-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4636502							
<b>WG3051587-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.1		%		80-120	16-MAY-19
<b>WG3051587-21</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-MAY-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4636502							
<b>WG3051587-22</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			103.1		%		80-120	16-MAY-19
<b>WG3051587-21</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	16-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4636590							
<b>WG3051280-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	15-MAY-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4630905							
<b>WG3046912-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.9		%		80-120	10-MAY-19
<b>WG3046912-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4630905							
<b>WG3046912-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4631153							
<b>WG3047327-6 LCS</b>								
Sulfate (SO4)			101.7		%		90-110	10-MAY-19
<b>WG3047327-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	10-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4636681							
<b>WG3050344-2 LCS</b>								
Total Dissolved Solids			93.3		%		85-115	15-MAY-19
<b>WG3050344-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	15-MAY-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4637012							
<b>WG3052313-10 LCS</b>								
Total Kjeldahl Nitrogen			95.6		%		75-125	16-MAY-19
<b>WG3052313-14 LCS</b>								
Total Kjeldahl Nitrogen			95.2		%		75-125	16-MAY-19
<b>WG3052313-18 LCS</b>								
Total Kjeldahl Nitrogen			94.2		%		75-125	16-MAY-19
<b>WG3052313-2 LCS</b>								
Total Kjeldahl Nitrogen			97.2		%		75-125	16-MAY-19
<b>WG3052313-6 LCS</b>								
Total Kjeldahl Nitrogen			95.4		%		75-125	16-MAY-19
<b>WG3052313-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-MAY-19
<b>WG3052313-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-MAY-19
<b>WG3052313-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-MAY-19
<b>WG3052313-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-MAY-19
<b>WG3052313-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-MAY-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4636615							
<b>WG3050221-4</b>	<b>LCS</b>							
Total Suspended Solids			98.0		%		85-115	15-MAY-19
<b>WG3050221-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	15-MAY-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4631265							
<b>WG3047201-17</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	10-MAY-19
<b>WG3047201-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	10-MAY-19

# Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2270956

Report Date: 17-MAY-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	09-MAY-19 14:20	14-MAY-19 15:05	0.25	121	hours	EHTR-FM
	2	09-MAY-19 09:30	14-MAY-19 15:05	0.25	126	hours	EHTR-FM
	3	09-MAY-19 11:15	14-MAY-19 15:05	0.25	124	hours	EHTR-FM
pH	1	09-MAY-19 14:20	15-MAY-19 09:00	0.25	139	hours	EHTR-FM
	2	09-MAY-19 09:30	15-MAY-19 09:00	0.25	144	hours	EHTR-FM
	3	09-MAY-19 11:15	15-MAY-19 09:00	0.25	142	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2270956 were received on 10-MAY-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 20190509Q2GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	Bryan.Ogden@teck.com	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 St NE,			Email 3:	Kimberly.hackett@teck.com	X	X
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@teck.com	X	X
								Email 5:	Teck.Lab.Support@hazepolm.teck.com	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VPO09611852	X	X
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897						

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	FILTERED	ANALYSIS REQUESTED													
									TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (\$SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TSS/TOC (APHA 4500-NORG)	Total Nitrogen for BC (ND3 and ND3)	T-ULTRA MERCURY (\$SW6020)	D-ULTRA MERCURY (\$SW6020)	BPH (C10-C32)	D-Mercury			
EV_BCgw_WG_2019-04_NP	EV_BCgw	WG	N	5/9/2019	14:40	G	5		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EV_LSGw_WG_2019-04_NP	EV_LSGw	WG	N	5/9/2019	9:30	G	5		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EV_GCgw_WG_2019-04_NP	EV_GCgw	WG	N	5/9/2019	11:15	G	5		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total							15															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberly Hackett	May 9, 2019	<i>[Signature]</i>	5/10 - 9:10

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberly Hackett <i>[Signature]</i>	
	Sampler's Signature	Date/Time
		May 9, 2019



L2270956-COFC

*82*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 17-MAY-19  
Report Date: 29-MAY-19 14:32 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2275453  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190515Q2GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2275453-1 WG 15-MAY-19 12:00 EV_ECGW_WG_2 019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	413			
	Hardness (as CaCO3) (mg/L)	172			
	pH (pH)	8.36			
	ORP (mV)	412			
	Total Suspended Solids (mg/L)	1520	DLHC		
	Total Dissolved Solids (mg/L)	225			
	Turbidity (NTU)	2000			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	445			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	2.8			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	448			
	Ammonia as N (mg/L)	0.0059			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.57			
	Fluoride (F) (mg/L)	0.766			
	Ion Balance (%)	48.0	BL:INT		
	Nitrate (as N) (mg/L)	0.0796			
	Nitrite (as N) (mg/L)	0.0049			
	Total Kjeldahl Nitrogen (mg/L)	0.80	DLM		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0050	DLM		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0080			
	Phosphorus (P)-Total (mg/L)	0.714	DLHC		
	Sulfate (SO4) (mg/L)	28.0			
	Anion Sum (meq/L)	9.59			
	Cation Sum (meq/L)	4.61			
	Cation - Anion Balance (%)	-35.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.56			
	Total Organic Carbon (mg/L)	10	DLM		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0056			
	Antimony (Sb)-Dissolved (mg/L)	0.00025			
	Arsenic (As)-Dissolved (mg/L)	0.00030			
	Barium (Ba)-Dissolved (mg/L)	0.0420			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2275453-1 WG 15-MAY-19 12:00 EV_ECGW_WG_2 019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.102			
	Cadmium (Cd)-Dissolved (ug/L)	0.0283			
	Calcium (Ca)-Dissolved (mg/L)	38.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00040 <sup>DLB</sup>			
	Cobalt (Co)-Dissolved (ug/L)	0.28			
	Copper (Cu)-Dissolved (mg/L)	0.00083			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0119			
	Magnesium (Mg)-Dissolved (mg/L)	18.5			
	Manganese (Mn)-Dissolved (mg/L)	0.126			
	Mercury (Hg)-Dissolved (mg/L)	0.000133			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0132			
	Nickel (Ni)-Dissolved (mg/L)	0.00163			
	Potassium (K)-Dissolved (mg/L)	0.922			
	Selenium (Se)-Dissolved (ug/L)	0.534			
	Silicon (Si)-Dissolved (mg/L)	4.55			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	26.4			
	Strontium (Sr)-Dissolved (mg/L)	0.394			
	Thallium (Tl)-Dissolved (mg/L)	0.000017			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00254			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Chromium (Cr)-Dissolved	MB-LOR	L2275453-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2275453-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2275453-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2275453-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2275453-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2275453-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2275453-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190515Q2GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4645023							
<b>WG3059205-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.8		%		85-115	24-MAY-19
<b>WG3059205-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	24-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4645043							
<b>WG3059163-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	24-MAY-19
<b>WG3059163-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	24-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4641527							
<b>WG3053872-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.9		%		80-120	23-MAY-19
<b>WG3053872-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4638183							
<b>WG3053781-26</b>	<b>LCS</b>							
Bromide (Br)			105.4		%		85-115	18-MAY-19
<b>WG3053781-25</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	18-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4644043							
<b>WG3058556-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.6		%		80-120	24-MAY-19
<b>WG3058556-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4644043							
<b>WG3058556-2</b>	<b>LCS</b>							
Total Organic Carbon			96.8		%		80-120	24-MAY-19
<b>WG3058556-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-MAY-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4638183							
<b>WG3053781-26</b>	<b>LCS</b>							
Chloride (Cl)			103.1		%		90-110	18-MAY-19
<b>WG3053781-25</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	18-MAY-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4637650							
<b>WG3053101-2</b>	<b>LCS</b>							
Colour, True			103.1		%		85-115	17-MAY-19
<b>WG3053101-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	17-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4645043							
<b>WG3059163-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.6		%		90-110	24-MAY-19
<b>WG3059163-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	24-MAY-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4638183							
<b>WG3053781-26</b>	<b>LCS</b>							
Fluoride (F)			105.7		%		90-110	18-MAY-19
<b>WG3053781-25</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	18-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4641005							
<b>WG3054559-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.4		%		80-120	23-MAY-19
<b>WG3054559-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-MAY-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4641527							
<b>WG3053872-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	23-MAY-19
Antimony (Sb)-Dissolved			98.0		%		80-120	23-MAY-19
Arsenic (As)-Dissolved			95.4		%		80-120	23-MAY-19
Barium (Ba)-Dissolved			99.3		%		80-120	23-MAY-19
Bismuth (Bi)-Dissolved			101.9		%		80-120	23-MAY-19
Boron (B)-Dissolved			97.1		%		80-120	23-MAY-19



## Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4641527</b>							
<b>WG3053872-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			102.1		%		80-120	23-MAY-19
Calcium (Ca)-Dissolved			97.9		%		80-120	23-MAY-19
Chromium (Cr)-Dissolved			99.4		%		80-120	23-MAY-19
Cobalt (Co)-Dissolved			98.1		%		80-120	23-MAY-19
Copper (Cu)-Dissolved			98.4		%		80-120	23-MAY-19
Iron (Fe)-Dissolved			97.1		%		80-120	23-MAY-19
Lead (Pb)-Dissolved			105.3		%		80-120	23-MAY-19
Lithium (Li)-Dissolved			105.8		%		80-120	23-MAY-19
Magnesium (Mg)-Dissolved			101.1		%		80-120	23-MAY-19
Manganese (Mn)-Dissolved			97.5		%		80-120	23-MAY-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	23-MAY-19
Nickel (Ni)-Dissolved			100.1		%		80-120	23-MAY-19
Potassium (K)-Dissolved			98.3		%		80-120	23-MAY-19
Selenium (Se)-Dissolved			100.5		%		80-120	23-MAY-19
Silicon (Si)-Dissolved			100.7		%		60-140	23-MAY-19
Silver (Ag)-Dissolved			96.9		%		80-120	23-MAY-19
Sodium (Na)-Dissolved			104.2		%		80-120	23-MAY-19
Strontium (Sr)-Dissolved			98.1		%		80-120	23-MAY-19
Thallium (Tl)-Dissolved			103.9		%		80-120	23-MAY-19
Tin (Sn)-Dissolved			98.0		%		80-120	23-MAY-19
Titanium (Ti)-Dissolved			95.2		%		80-120	23-MAY-19
Uranium (U)-Dissolved			107.1		%		80-120	23-MAY-19
Vanadium (V)-Dissolved			97.9		%		80-120	23-MAY-19
Zinc (Zn)-Dissolved			101.8		%		80-120	23-MAY-19
<b>WG3053872-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-MAY-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	23-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-MAY-19
Chromium (Cr)-Dissolved			0.00022	MB-LOR	mg/L		0.0001	23-MAY-19



## Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4641527</b>							
<b>WG3053872-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4644550</b>							
<b>WG3059162-10</b>	<b>LCS</b>							
Ammonia as N			92.8		%		85-115	25-MAY-19
<b>WG3059162-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	25-MAY-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4638183</b>							
<b>WG3053781-26</b>	<b>LCS</b>							
Nitrite (as N)			107.6		%		90-110	18-MAY-19
<b>WG3053781-25</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	18-MAY-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							







## Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4638813</b>							
<b>WG3053670-2</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	18-MAY-19
<b>WG3053670-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	18-MAY-19

# Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

---

# Quality Control Report

Workorder: L2275453

Report Date: 29-MAY-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	15-MAY-19 12:00	22-MAY-19 13:30	0.25	169	hours	EHTR-FM
pH	1	15-MAY-19 12:00	24-MAY-19 09:00	0.25	213	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2275453 were received on 17-MAY-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

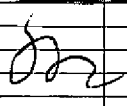
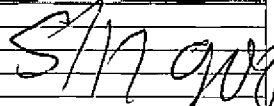

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

<b>COC ID:</b> 20190515Q2GW		<b>TURNAROUND TIME:</b>		<b>RUSH:</b>			
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel	PDF	EDD
Job Description	Q2 Ground Water Sampling	Lab Contact	Lyndylva Shvets	Email 1:	Bryan.Ordens@teck.com		
Project Manager	Cameron Griffin	Email	lyndylva.shvets@alsglobal.com	Email 2:	teckcoal@equisonline.com		
Email	Cameron.Griffin@teck.com	Address	2559 29 St NE	Email 3:	kimberly.hackett@teck.com		
Address	RR#1 HWY#3			Email 4:	Cameron.Griffin@teck.com		
				Email 5:	Teck.Lab.Rep@sharepoint.teck.com		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897		
						PO #	VPO00610852

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (2:4hr)	C=Grab C=C-Comp	# Of Cont.	ANALYSIS REQUESTED																						
								TECKCOAL-ROUTINE-VIA (EN05.1)	True Colour	TECKCOAL-MET-D-VIA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	As	Cd	Cr	Pb	Se							
EV_BCgw_WG_2019-04_NP	EV_Egw	WG	N			G	5	1	1	1	1																			
							Total	5																						

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>REMOVED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered		Kimberly Hackett		May 15, 2019					
<b>NO OF BOTTLES RETURNED/DESCRIPTION</b>		<b>Sampler's Name</b>	<b>Sampler's Signature</b>	<b>Mobile #</b>	<b>Date/Time</b>				
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS		Kimberly Hackett			May 15, 2019				

L2275453



L2275453-COFC

6



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 22-MAY-19  
Report Date: 03-JUN-19 18:47 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2277695  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190521q2gw  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2277695-1 WG 21-MAY-19 09:55 EV_MC5GW_WG_ 2019-04_NP	L2277695-2 WG 21-MAY-19 10:00 EV_MC6GW_WG_ 2019-04_NP	L2277695-3 WG 21-MAY-19 10:05 EV_MC7GW_WG_ 2019-04_NP	L2277695-4 WG 21-MAY-19 09:50 EV_OCGW_WG_2 019-04_NP	L2277695-5 WG 21-MAY-19 14:20 EV_WH50GW_WG_ 2019-04_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	466	<2.0	<2.0	479	357
	Hardness (as CaCO3) (mg/L)	149	<0.50	<0.50	149	179
	pH (pH)	8.42	5.48	5.02	8.45	8.31
	ORP (mV)	324	440	430	290	454
	Total Suspended Solids (mg/L)	3.5	<1.0	<1.0	4.3	1.3
	Total Dissolved Solids (mg/L)	257 <sup>DLHC</sup>	<10	<10	250 <sup>DLHC</sup>	194 <sup>DLHC</sup>
	Turbidity (NTU)	1.52	<0.10	<0.10	2.20	0.79
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	1.4	1.2	<1.0	1.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	178	<1.0	<1.0	184	136
	Alkalinity, Carbonate (as CaCO3) (mg/L)	4.4	<1.0	<1.0	5.6	1.2
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	182	<1.0	<1.0	190	137
	Ammonia as N (mg/L)	0.0394	<0.0050	0.0082	0.0541	0.0062
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	2.10	<0.50	<0.50	2.11	1.60
	Fluoride (F) (mg/L)	1.26	<0.020	<0.020	1.27	0.163
	Ion Balance (%)	96.9	0.0	0.0	94.9	94.2
	Nitrate (as N) (mg/L)	0.0076	<0.0050	<0.0050	0.0079	0.590
	Nitrite (as N) (mg/L)	0.0076	<0.0010	<0.0010	0.0072	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.052	<0.050	<0.050	0.057	0.149
	Orthophosphate-Dissolved (as P) (mg/L)	0.0070 <sup>RRV</sup>	<0.0010	<0.0010	0.0074	0.0052
	Phosphorus (P)-Total Dissolved (mg/L)	0.0059 <sup>RRV</sup>	<0.0020	<0.0020	0.0067	0.0044
	Phosphorus (P)-Total (mg/L)	0.0194	<0.0020	<0.0020	0.0145	0.0076
	Sulfate (SO4) (mg/L)	58.7	<0.30	<0.30	59.0	52.1
	Anion Sum (meq/L)	4.99	<0.10	<0.10	5.15	3.93
	Cation Sum (meq/L)	4.84	<0.10	<0.10	4.89	3.70
	Cation - Anion Balance (%)	-1.6	0.0	0.0	-2.6	-3.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.80	<0.50	<0.50	0.67	1.44
	Total Organic Carbon (mg/L)	1.04	<0.50	<0.50	0.87	1.29
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00021
	Arsenic (As)-Dissolved (mg/L)	0.00143	<0.00010	<0.00010	0.00146	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0516	<0.00010	<0.00010	0.0552	0.0605

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2277695-6 WG 21-MAY-19 13:35 EV_BRGW_WG_2 019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	1170			
	Hardness (as CaCO3) (mg/L)	633			
	pH (pH)	8.21			
	ORP (mV)	433			
	Total Suspended Solids (mg/L)	1.7			
	Total Dissolved Solids (mg/L)	803	DLHC		
	Turbidity (NTU)	0.85			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	6.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	269			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	269			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	26.9	DLHC		
	Fluoride (F) (mg/L)	0.13	DLHC		
	Ion Balance (%)	90.3			
	Nitrate (as N) (mg/L)	2.83	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	0.068	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0031	RRV		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0066	RRV		
	Phosphorus (P)-Total (mg/L)	0.0043	RRV		
	Sulfate (SO4) (mg/L)	389	DLHC		
	Anion Sum (meq/L)	14.5			
	Cation Sum (meq/L)	13.1			
	Cation - Anion Balance (%)	-5.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.78			
	Total Organic Carbon (mg/L)	0.62			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00014			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0619			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2277695-1	L2277695-2	L2277695-3	L2277695-4	L2277695-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	21-MAY-19	21-MAY-19	21-MAY-19	21-MAY-19	21-MAY-19
		Sampled Time	09:55	10:00	10:05	09:50	14:20
		Client ID	EV_MC5GW_WG_2019-04_NP	EV_MC6GW_WG_2019-04_NP	EV_MC7GW_WG_2019-04_NP	EV_OCGW_WG_2019-04_NP	EV_WH50GW_WG_2019-04_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.116	<0.010	<0.010	0.117	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0119	<0.0050	<0.0050	0.0118	0.0102
	Calcium (Ca)-Dissolved (mg/L)		27.8	<0.050	<0.050	27.5	44.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		0.26	<0.10	<0.10	0.26	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.053	<0.010	<0.010	0.055	0.023
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0244	<0.0010	<0.0010	0.0242	0.0071
	Magnesium (Mg)-Dissolved (mg/L)		19.4	<0.10	<0.10	19.4	16.4
	Manganese (Mn)-Dissolved (mg/L)		0.0792	<0.00010	<0.00010	0.0825	0.00435
	Mercury (Hg)-Dissolved (mg/L)						<0.000050
	Mercury (Hg)-Dissolved (ug/L)		<0.00050	<0.00050	<0.00050	<0.00050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.0157	<0.000050	<0.000050	0.0155	0.00124
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		1.54	<0.050	<0.050	1.59	0.685
	Selenium (Se)-Dissolved (ug/L)		<0.050	<0.050	<0.050	<0.050	5.04
	Silicon (Si)-Dissolved (mg/L)		4.38	<0.050	<0.050	4.36	1.94
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		41.7	<0.050	<0.050	42.9	2.42
	Strontium (Sr)-Dissolved (mg/L)		0.429	<0.00020	<0.00020	0.424	0.113
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00126	<0.000010	<0.000010	0.00126	0.000791
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0013	<0.0010	<0.0010	0.0017	<0.0010
<b>Hydrocarbons</b>	EPH10-19 (mg/L)		<0.25	<0.25		<0.25	
	EPH (C10-C32) (mg/L)		<0.50	<0.50		<0.50	
	EPH19-32 (mg/L)		<0.25	<0.25		<0.25	
	TEH (C10-C30) (mg/L)		<0.25	<0.25		<0.25	
	Surrogate: 2-Bromobenzotrifluoride (%)		93.0	89.7		92.7	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2277695-6 WG 21-MAY-19 13:35 EV_BRGW_WG_2 019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.039			
	Cadmium (Cd)-Dissolved (ug/L)	0.0438			
	Calcium (Ca)-Dissolved (mg/L)	163			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.034			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0478			
	Magnesium (Mg)-Dissolved (mg/L)	54.6			
	Manganese (Mn)-Dissolved (mg/L)	0.00454			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.000619			
	Nickel (Ni)-Dissolved (mg/L)	0.00171			
	Potassium (K)-Dissolved (mg/L)	2.15			
	Selenium (Se)-Dissolved (ug/L)	13.3			
	Silicon (Si)-Dissolved (mg/L)	3.40			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	8.15			
	Strontium (Sr)-Dissolved (mg/L)	0.354			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00159			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0061			
<b>Hydrocarbons</b>	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2277695-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**EPH(10-32)-CALC-CL** Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.



## Reference Information

<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TEH-BC-VA-CL</b>	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
<b>TEH-WATER-VA-CL</b>	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190521q2gw

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 1 of 10

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651264</b>							
<b>WG3062527-9</b>	<b>DUP</b>	<b>L2277695-1</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	29-MAY-19
<b>WG3062527-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.6		%		85-115	29-MAY-19
<b>WG3062527-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.3		%		85-115	29-MAY-19
<b>WG3062527-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	29-MAY-19
<b>WG3062527-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	29-MAY-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651236</b>							
<b>WG3062539-35</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	29-MAY-19
<b>WG3062539-34</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-MAY-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4644320</b>							
<b>WG3058177-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.0		%		80-120	25-MAY-19
<b>WG3058177-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4643069</b>							
<b>WG3057923-6</b>	<b>LCS</b>							
Bromide (Br)			103.1		%		85-115	23-MAY-19
<b>WG3057923-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4645675</b>							
<b>WG3060550-7</b>	<b>DUP</b>	<b>L2277695-3</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	27-MAY-19
<b>WG3060550-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.4		%		80-120	27-MAY-19
<b>WG3060550-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	27-MAY-19
<b>WG3060550-8</b>	<b>MS</b>	<b>L2277695-4</b>						



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4645675							
WG3060550-8	MS	L2277695-4						
Dissolved Organic Carbon			88.4		%		70-130	27-MAY-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4645675							
WG3060550-7	DUP	L2277695-3						
Total Organic Carbon			<0.50	RPD-NA	mg/L	N/A	20	27-MAY-19
WG3060550-6	LCS							
Total Organic Carbon			105.2		%		80-120	27-MAY-19
WG3060550-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	27-MAY-19
WG3060550-8	MS	L2277695-4						
Total Organic Carbon			90.9		%		70-130	27-MAY-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4643069							
WG3057923-6	LCS							
Chloride (Cl)			101.7		%		90-110	23-MAY-19
WG3057923-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	23-MAY-19
<b>COLOUR-TRUE-CL</b> <b>Water</b>								
Batch	R4641635							
WG3057080-3	DUP	L2277695-6						
Colour, True			<5.0	RPD-NA	CU	N/A	20	23-MAY-19
WG3057080-2	LCS							
Colour, True			101.4		%		85-115	23-MAY-19
WG3057080-1	MB							
Colour, True			<5.0		CU		5	23-MAY-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4651236							
WG3062539-35	LCS							
Conductivity (@ 25C)			107.4		%		90-110	29-MAY-19
WG3062539-34	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-MAY-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Batch R4643069</b>								
<b>WG3057923-6</b>	<b>LCS</b>							
Fluoride (F)			107.2		%		90-110	23-MAY-19
<b>WG3057923-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-MAY-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4645784</b>								
<b>WG3059645-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.6		%		80-120	28-MAY-19
<b>WG3059645-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-MAY-19
<b>HG-D-U-CVAF-VA</b>								
<b>Batch R4648006</b>								
<b>WG3060984-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.0		%		80-120	29-MAY-19
<b>WG3060984-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	29-MAY-19
<b>WG3060984-3</b>	<b>MS</b>	<b>L2277695-4</b>						
Mercury (Hg)-Dissolved			89.8		%		70-130	29-MAY-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4644320</b>								
<b>WG3058177-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.1		%		80-120	25-MAY-19
Antimony (Sb)-Dissolved			101.7		%		80-120	25-MAY-19
Arsenic (As)-Dissolved			98.6		%		80-120	25-MAY-19
Barium (Ba)-Dissolved			97.3		%		80-120	25-MAY-19
Bismuth (Bi)-Dissolved			102.2		%		80-120	25-MAY-19
Boron (B)-Dissolved			90.4		%		80-120	25-MAY-19
Cadmium (Cd)-Dissolved			97.9		%		80-120	25-MAY-19
Calcium (Ca)-Dissolved			97.4		%		80-120	25-MAY-19
Chromium (Cr)-Dissolved			99.5		%		80-120	25-MAY-19
Cobalt (Co)-Dissolved			99.3		%		80-120	25-MAY-19
Copper (Cu)-Dissolved			97.9		%		80-120	25-MAY-19
Iron (Fe)-Dissolved			100.2		%		80-120	25-MAY-19
Lead (Pb)-Dissolved			103.0		%		80-120	25-MAY-19
Lithium (Li)-Dissolved			93.3		%		80-120	25-MAY-19
Magnesium (Mg)-Dissolved			101.9		%		80-120	25-MAY-19



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4644320</b>							
<b>WG3058177-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			95.2		%		80-120	25-MAY-19
Molybdenum (Mo)-Dissolved			103.2		%		80-120	25-MAY-19
Nickel (Ni)-Dissolved			98.2		%		80-120	25-MAY-19
Potassium (K)-Dissolved			100.1		%		80-120	25-MAY-19
Selenium (Se)-Dissolved			97.5		%		80-120	25-MAY-19
Silicon (Si)-Dissolved			103.4		%		60-140	25-MAY-19
Silver (Ag)-Dissolved			105.9		%		80-120	25-MAY-19
Sodium (Na)-Dissolved			104.2		%		80-120	25-MAY-19
Strontium (Sr)-Dissolved			104.7		%		80-120	25-MAY-19
Thallium (Tl)-Dissolved			100.9		%		80-120	25-MAY-19
Tin (Sn)-Dissolved			98.9		%		80-120	25-MAY-19
Titanium (Ti)-Dissolved			98.6		%		80-120	25-MAY-19
Uranium (U)-Dissolved			100.1		%		80-120	25-MAY-19
Vanadium (V)-Dissolved			99.9		%		80-120	25-MAY-19
Zinc (Zn)-Dissolved			98.2		%		80-120	25-MAY-19
<b>WG3058177-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-19



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4644320</b>							
<b>WG3058177-1</b>	<b>MB</b>	<b>NP</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-MAY-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651497</b>							
<b>WG3063416-6</b>	<b>LCS</b>							
Ammonia as N			110.2		%		85-115	30-MAY-19
<b>WG3063416-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-MAY-19
<b>Batch</b>	<b>R4654407</b>							
<b>WG3066145-2</b>	<b>LCS</b>							
Ammonia as N			101.5		%		85-115	03-JUN-19
<b>WG3066145-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	03-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4643069</b>							
<b>WG3057923-6</b>	<b>LCS</b>							
Nitrite (as N)			104.3		%		90-110	23-MAY-19
<b>WG3057923-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-MAY-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4643069</b>							
<b>WG3057923-6</b>	<b>LCS</b>							
Nitrate (as N)			102.0		%		90-110	23-MAY-19
<b>WG3057923-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-MAY-19







## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4645916							
<b>WG3059255-17</b>	<b>LCS</b>							
Total Dissolved Solids			95.4		%		85-115	27-MAY-19
<b>WG3059255-20</b>	<b>LCS</b>							
Total Dissolved Solids			97.0		%		85-115	27-MAY-19
<b>WG3059255-16</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-MAY-19
<b>WG3059255-19</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-MAY-19
<b>TEH-BC-VA-CL</b>		<b>Water</b>						
Batch	R4644725							
<b>WG3058744-2</b>	<b>LCS</b>							
EPH10-19			112.9		%		70-130	26-MAY-19
EPH19-32			106.7		%		70-130	26-MAY-19
<b>WG3058744-1</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	26-MAY-19
EPH19-32			<0.25		mg/L		0.25	26-MAY-19
Surrogate: 2-Bromobenzotrifluoride			92.4		%		60-140	26-MAY-19
<b>TEH-WATER-VA-CL</b>		<b>Water</b>						
Batch	R4644725							
<b>WG3058744-2</b>	<b>LCS</b>							
TEH (C10-C30)			111.5		%		70-130	26-MAY-19
<b>WG3058744-1</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	26-MAY-19
Surrogate: 2-Bromobenzotrifluoride			92.4		%		60-140	26-MAY-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4651306							
<b>WG3063033-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.1		%		75-125	30-MAY-19
<b>WG3063033-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.2		%		75-125	30-MAY-19
<b>WG3063033-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.3		%		75-125	30-MAY-19
<b>WG3063033-10</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>WG3063033-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>WG3063033-7</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch R4651306</b>								
<b>WG3063033-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>Batch R4651431</b>								
<b>WG3063294-2 LCS</b>								
Total Kjeldahl Nitrogen			95.2		%		75-125	30-MAY-19
<b>WG3063294-5 LCS</b>								
Total Kjeldahl Nitrogen			96.7		%		75-125	30-MAY-19
<b>WG3063294-7 LCS</b>								
Total Kjeldahl Nitrogen			93.0		%		75-125	30-MAY-19
<b>WG3063294-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>WG3063294-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>WG3063294-6 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-MAY-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch R4647849</b>								
<b>WG3060857-10 LCS</b>								
Total Suspended Solids			98.5		%		85-115	28-MAY-19
<b>WG3060857-8 LCS</b>								
Total Suspended Solids			100.5		%		85-115	28-MAY-19
<b>WG3060857-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-MAY-19
<b>WG3060857-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-MAY-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch R4641829</b>								
<b>WG3057422-11 LCS</b>								
Turbidity			98.0		%		85-115	23-MAY-19
<b>WG3057422-10 MB</b>								
Turbidity			<0.10		NTU		0.1	23-MAY-19

# Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2277695

Report Date: 03-JUN-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	21-MAY-19 09:55	28-MAY-19 10:25	0.25	168	hours	EHTR-FM
	2	21-MAY-19 10:00	28-MAY-19 10:25	0.25	168	hours	EHTR-FM
	3	21-MAY-19 10:05	28-MAY-19 10:25	0.25	168	hours	EHTR-FM
	4	21-MAY-19 09:50	28-MAY-19 10:25	0.25	168	hours	EHTR-FM
	5	21-MAY-19 14:20	28-MAY-19 10:25	0.25	164	hours	EHTR-FM
	6	21-MAY-19 13:35	28-MAY-19 12:20	0.25	167	hours	EHTR-FM
pH							
	1	21-MAY-19 09:55	29-MAY-19 15:00	0.25	197	hours	EHTR-FM
	2	21-MAY-19 10:00	29-MAY-19 15:00	0.25	197	hours	EHTR-FM
	3	21-MAY-19 10:05	29-MAY-19 15:00	0.25	197	hours	EHTR-FM
	4	21-MAY-19 09:50	29-MAY-19 15:00	0.25	197	hours	EHTR-FM
	5	21-MAY-19 14:20	29-MAY-19 15:00	0.25	193	hours	EHTR-FM
	6	21-MAY-19 13:35	29-MAY-19 15:00	0.25	193	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2277695 were received on 22-MAY-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

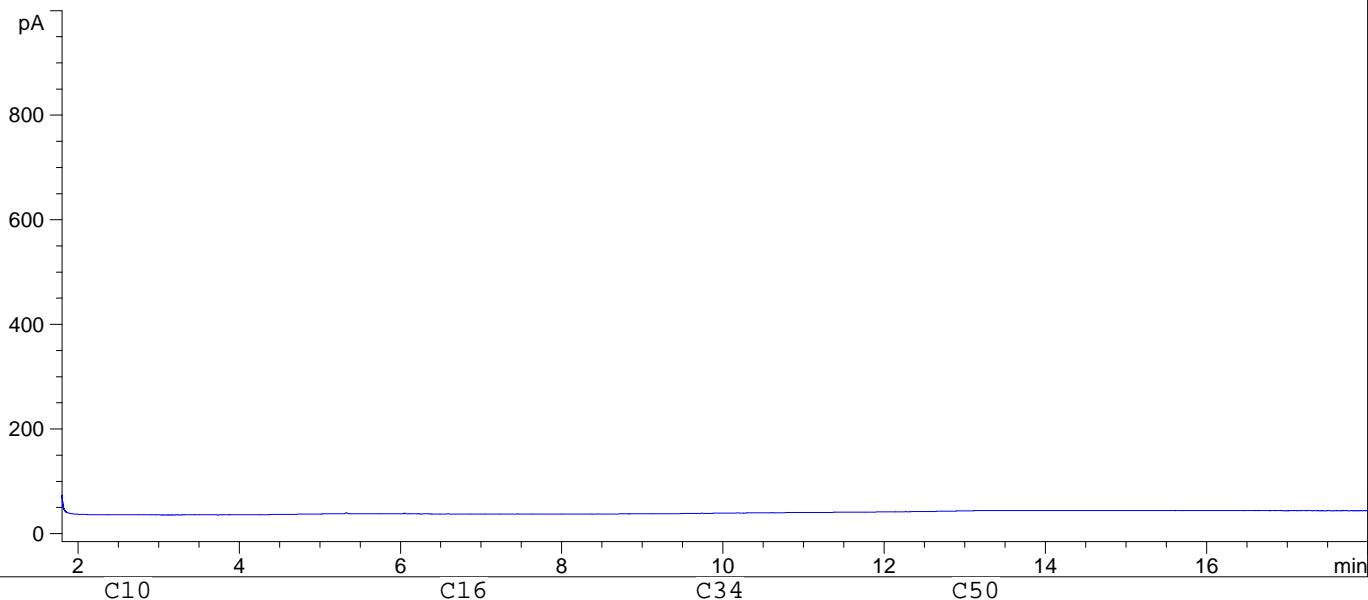
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

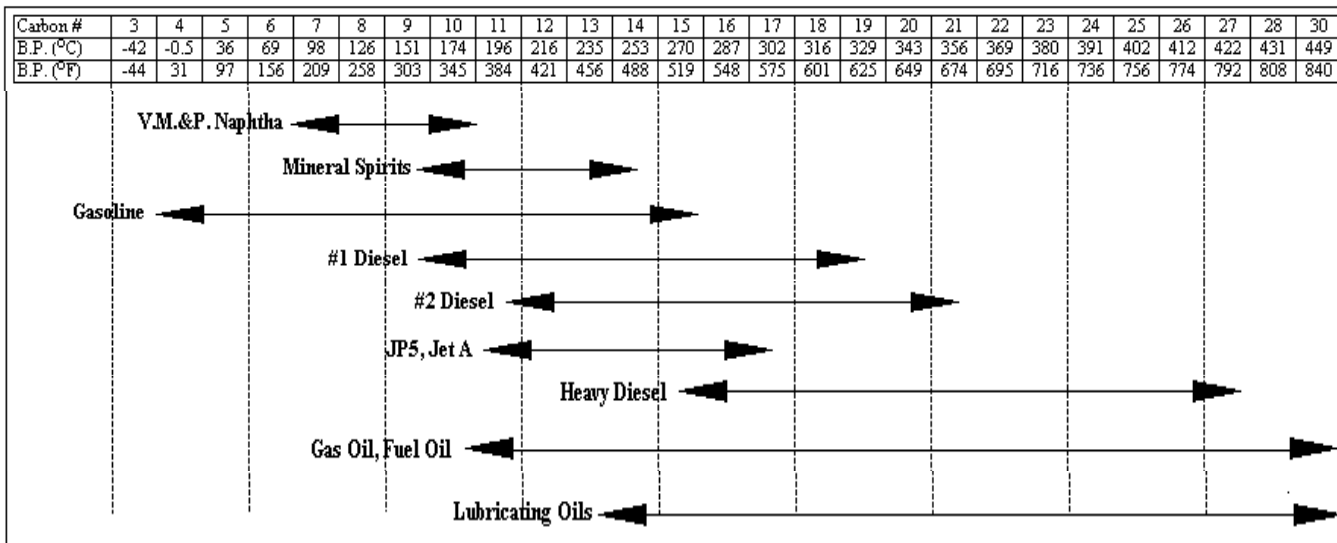


Sample ID: L2277695-1 V4VA  
 Injection Date: 5/26/2019  
 Injection Time: 7:28:19 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190526\_SE\_DA\_TI\_SIG2000010.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

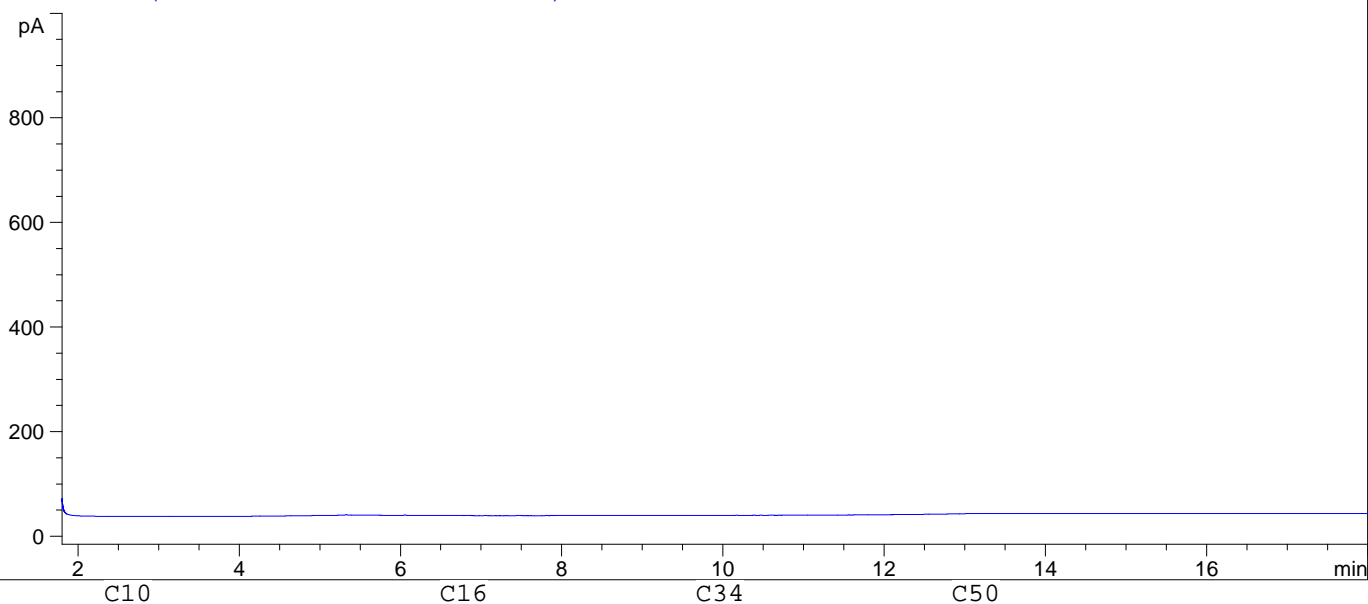
Summed Peaks Report

=====  
 =====  
 Final Summed Peaks Report  
 =====

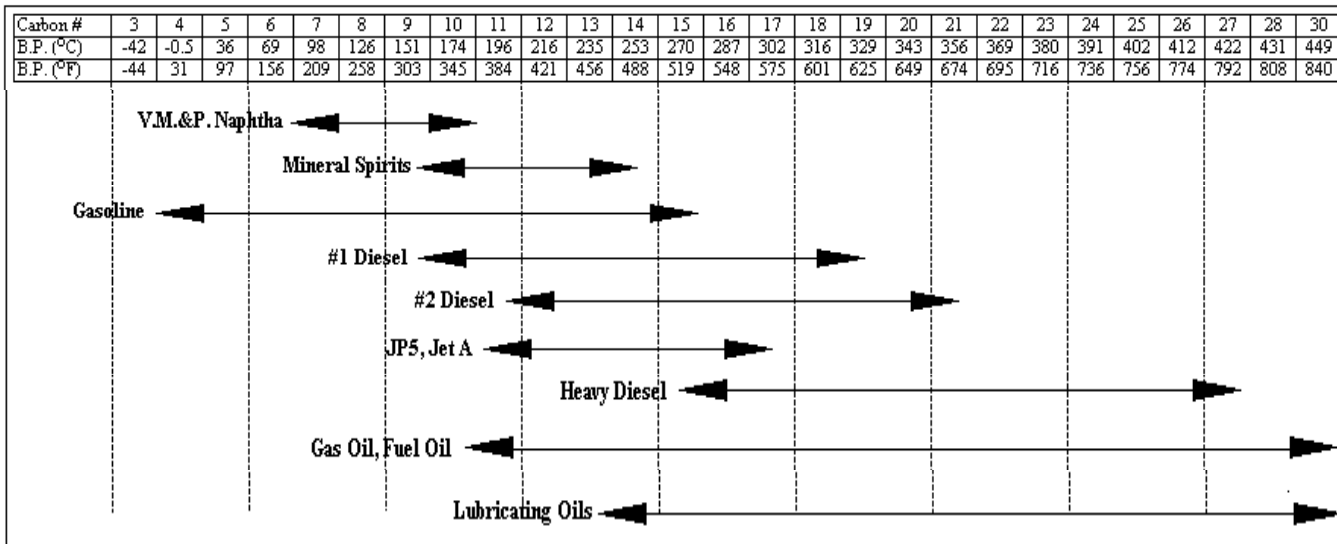


Sample ID: L2277695-2 V4VA  
 Injection Date: 5/26/2019  
 Injection Time: 8:01:41 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190526\_SE\_DA\_TI\_SIG2000011.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

Summed Peaks Report

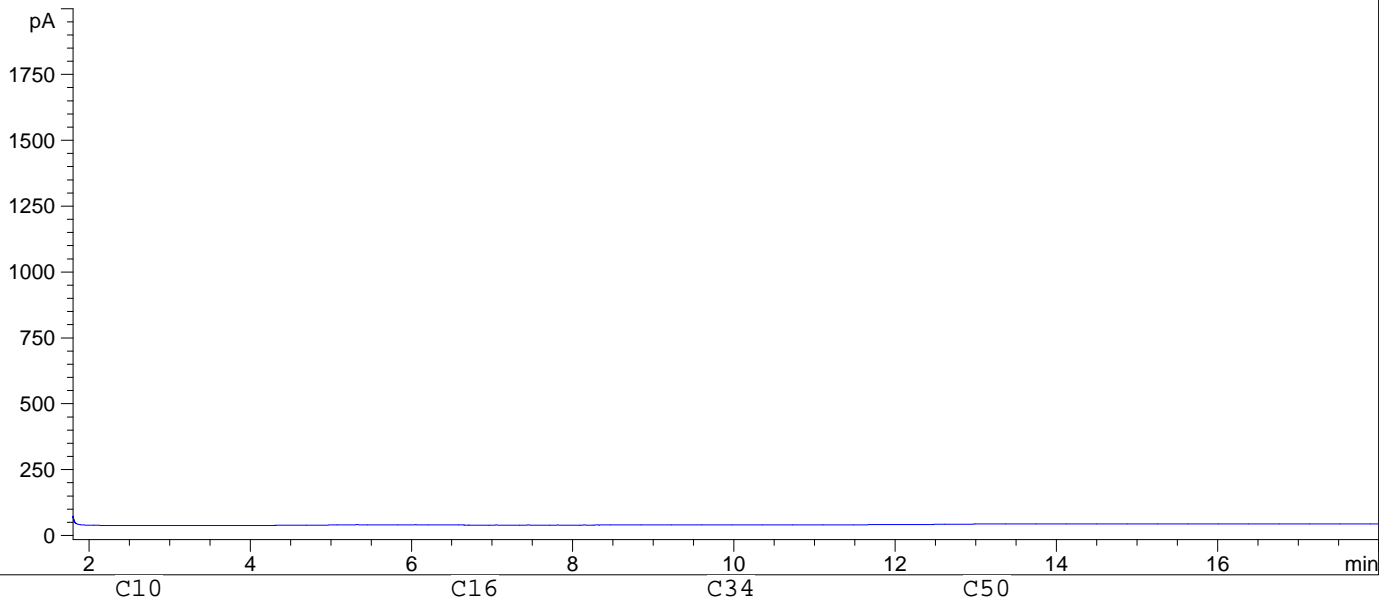
=====  
 =====  
 Final Summed Peaks Report  
 =====

Client ID: EV\_OCGW\_WG\_2019-04\_NP



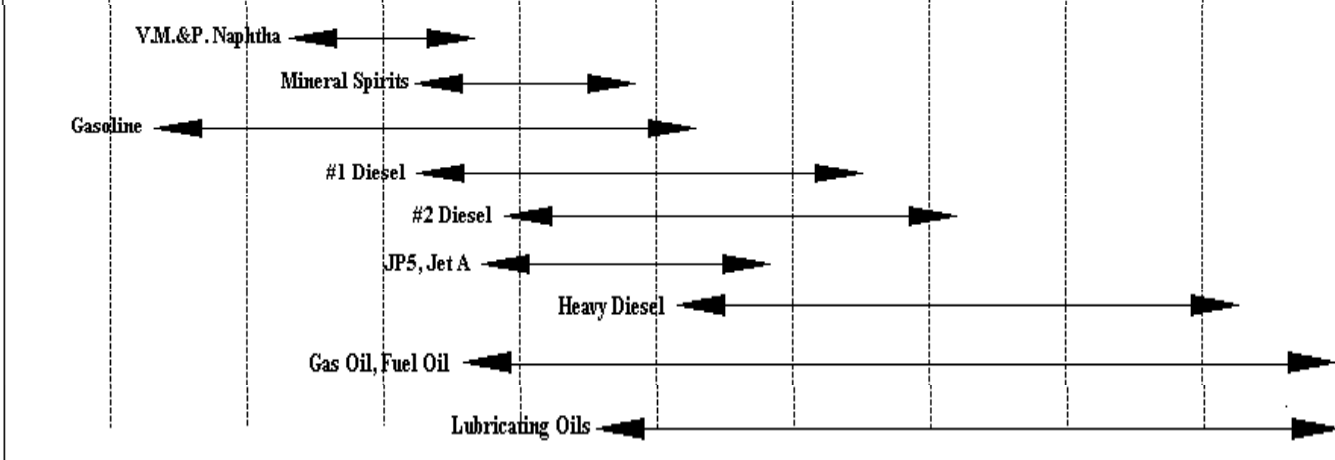
Sample ID: L2277695-4 V4VA  
 Injection Date: 5/26/2019  
 Injection Time: 8:34:34 PM  
 Instrument ID: HP9  
 Operator:

FID2 B, (A190526\_SE\_DA\_TI\_SIG2000012.D)



Boiling Point Distribution Range for Petroleum Based Fuel Products

Carbon #	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
B.P. (°C)	-42	-0.5	36	69	98	126	151	174	196	216	235	253	270	287	302	316	329	343	356	369	380	391	402	412	422	431	449
B.P. (°F)	-44	31	97	156	209	258	303	345	384	421	456	488	519	548	575	601	625	649	674	695	716	736	756	774	792	808	840



Adapted from: Drews, A.W., ED. Manual on Hydrocarbon Analysis, 4th ed.; American Society for Testing and Materials: Philadelphia, PA., 1989: p XVIII.

Summed Peaks Report

=====  
 =====  
 Final Summed Peaks Report  
 =====

Name	Total Area [pA*s]	Area %
------	----------------------	-----------

BBTF SURROGATE	3399.90088	0.0000
C10-C19	180.61041	0.0000
C19-C30	86.40125	0.0000
C30-C32	14.73728	0.0000
HEAVIER	1245.89551	0.0000
Totals :		0.0000



# Teck

COC ID: 20190521Q2GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	BDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	Bryan.Ogden@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckco2@equisonline.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2359 29 St NE			Email 3:	kimberley.hackett@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@Teck.com	X	X	X
								Email 5:	tecklabresults@ahapoint.teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VPO00610852			
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897							

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C=Comp	# Of Cont.	ANALYSIS	ANALYSIS REQUESTED														
									Filtered	No	No	Yes	Yes	No	No	No	No	No	No	No			
									Preserved		Nickel	Sulphuric	Sulphuric	Sulphuric				Sulfide	IICT				
EV_MC5gw_WG_2019-04_NP	EV_MC5gw	WG	N	5/21/2019	9:55	G	7	TECKCOAL-ROUTINE-VA (E305-1)	1		1												
EV_MC6gw_WG_2019-04_NP	EV_MC6gw	WG	N	5/21/2019	10:00	G	7	True Colour	1		1												
EV_MC7gw_WG_2019-04_NP	EV_MC7gw	WG	N	5/21/2019	10:05	G	5	TECKCOAL-MET-D-VA (SW6020)	1		1												
EV_OCgw_WG_2019-04_NP	EV_OCgw	WG	N	5/21/2019	9:58	G	7	DOC (APHA 5310)	1		1												
EV_WH50gw_WG_2019-04_NP	EV_WH50gw	WG	N	5/21/2019	14:20	G	5	Dissolved Phosphorus	1		1												
EV_BRgw_WG_2019-04_NP	EV_BRgw	WG	N	5/21/2019	13:35	G	5	TKN/TOC (APHA 4500-NORG)	1		1												
								Total Nitrogen for BC (NO2 and NO3)	1		1												
								TOTAL MERCURY (SW6030)	1		1												
								D-ULTRA MERCURY (SW6030)	1		1												
								EPH (C10-C32)	1		1												
								D-Mercury	1		1												
								Total	36														

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved EV_MC6gw and EV_MC7gw were not field filtered	Kimberley Hackett	May 21, 2019	<i>[Signature]</i>	5/22/2019

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett <i>[Signature]</i>		May 21, 2019



L2277695-COFC



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 06-JUN-19  
Report Date: 18-JUN-19 20:57 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2286798  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190605Q2GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2286798-1 WG 05-JUN-19 10:00 EV_WF_SW_WG_ 2019-04_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	531			
	Hardness (as CaCO3) (mg/L)	255			
	pH (pH)	8.24			
	ORP (mV)	301			
	Total Suspended Solids (mg/L)	22.8			
	Total Dissolved Solids (mg/L)	326 <sup>DLHC</sup>			
	Turbidity (NTU)	25.1			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	76.9			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	76.9			
	Ammonia as N (mg/L)	0.163			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	3.27			
	Fluoride (F) (mg/L)	0.094			
	Ion Balance (%)	97.7			
	Nitrate (as N) (mg/L)	0.0817			
	Nitrite (as N) (mg/L)	0.0029			
	Total Kjeldahl Nitrogen (mg/L)	0.351			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0035			
	Phosphorus (P)-Total (mg/L)	0.0121			
	Sulfate (SO4) (mg/L)	186			
	Anion Sum (meq/L)	5.51			
	Cation Sum (meq/L)	5.39			
	Cation - Anion Balance (%)	-1.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.57			
	Total Organic Carbon (mg/L)	4.09			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.00446			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2286798-1	WG	05-JUN-19	10:00	EV_WF_SW_WG_2019-04_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)					<0.020
	Bismuth (Bi)-Dissolved (mg/L)					<0.000050
	Boron (B)-Dissolved (mg/L)					<0.010
	Cadmium (Cd)-Dissolved (ug/L)					0.0084
	Calcium (Ca)-Dissolved (mg/L)					18.0
	Chromium (Cr)-Dissolved (mg/L)					<0.00010
	Cobalt (Co)-Dissolved (ug/L)					<0.10
	Copper (Cu)-Dissolved (mg/L)					<0.00050
	Iron (Fe)-Dissolved (mg/L)					0.103
	Lead (Pb)-Dissolved (mg/L)					<0.000050
	Lithium (Li)-Dissolved (mg/L)					0.0125
	Magnesium (Mg)-Dissolved (mg/L)					51.0
	Manganese (Mn)-Dissolved (mg/L)					0.368
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.000548
	Nickel (Ni)-Dissolved (mg/L)					<0.00050
	Potassium (K)-Dissolved (mg/L)					2.82
	Selenium (Se)-Dissolved (ug/L)					0.052
	Silicon (Si)-Dissolved (mg/L)					0.061
	Silver (Ag)-Dissolved (mg/L)					<0.000010
	Sodium (Na)-Dissolved (mg/L)					4.28
	Strontium (Sr)-Dissolved (mg/L)					0.0102
	Thallium (Tl)-Dissolved (mg/L)					<0.000010
	Tin (Sn)-Dissolved (mg/L)					<0.00010
	Titanium (Ti)-Dissolved (mg/L)					<0.010
	Uranium (U)-Dissolved (mg/L)					0.000015
	Vanadium (V)-Dissolved (mg/L)					<0.00050
	Zinc (Zn)-Dissolved (mg/L)					<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
		This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.	
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
		This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.	
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
		This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.	
		The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.	
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
		This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.	
		The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.	
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
		True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.	
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
		Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.	
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
		Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.	
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction	

## Reference Information

with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**      Water      Phosphorus (P)-Total Dissolved      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

---

20190605Q2GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670146</b>							
<b>WG3077278-3</b>	<b>DUP</b>	<b>L2286798-1</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	13-JUN-19
<b>WG3077278-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.0		%		85-115	13-JUN-19
<b>WG3077278-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	13-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4669583</b>							
<b>WG3076067-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	12-JUN-19
<b>WG3076067-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663019</b>							
<b>WG3071759-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.8		%		80-120	09-JUN-19
<b>WG3071759-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-JUN-19
<b>WG3071759-4</b>	<b>MS</b>	<b>L2286798-1</b>						
Beryllium (Be)-Dissolved			85.8		%		70-130	09-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668130</b>							
<b>WG3076211-6</b>	<b>LCS</b>							
Total Organic Carbon			108.8		%		80-120	12-JUN-19
<b>WG3076211-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Chloride (Cl)			104.2		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4661041							
<b>WG3070596-2 LCS</b>								
Colour, True			101.0		%		85-115	07-JUN-19
<b>WG3070596-1 MB</b>								
Colour, True			<5.0		CU		5	07-JUN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4669583							
<b>WG3076067-17 LCS</b>								
Conductivity (@ 25C)			103.2		%		90-110	12-JUN-19
<b>WG3076067-16 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	12-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10 LCS</b>								
Fluoride (F)			107.6		%		90-110	07-JUN-19
<b>WG3074230-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4664290							
<b>WG3074062-6 LCS</b>								
Mercury (Hg)-Dissolved			97.5		%		80-120	12-JUN-19
<b>WG3074062-5 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-JUN-19
<b>WG3074062-8 MS</b>		<b>L2286798-1</b>						
Mercury (Hg)-Dissolved			96.5		%		70-130	12-JUN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4663019							
<b>WG3071759-2 LCS</b>								
Aluminum (Al)-Dissolved			102.8		%		80-120	09-JUN-19
Antimony (Sb)-Dissolved			100.2		%		80-120	09-JUN-19
Arsenic (As)-Dissolved			99.6		%		80-120	09-JUN-19
Barium (Ba)-Dissolved			97.8		%		80-120	09-JUN-19
Bismuth (Bi)-Dissolved			99.4		%		80-120	09-JUN-19



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663019</b>							
<b>WG3071759-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			95.9		%		80-120	09-JUN-19
Cadmium (Cd)-Dissolved			100.9		%		80-120	09-JUN-19
Calcium (Ca)-Dissolved			102.6		%		80-120	09-JUN-19
Chromium (Cr)-Dissolved			100.4		%		80-120	09-JUN-19
Cobalt (Co)-Dissolved			98.4		%		80-120	09-JUN-19
Copper (Cu)-Dissolved			95.5		%		80-120	09-JUN-19
Iron (Fe)-Dissolved			95.9		%		80-120	09-JUN-19
Lead (Pb)-Dissolved			100.9		%		80-120	09-JUN-19
Lithium (Li)-Dissolved			98.4		%		80-120	09-JUN-19
Magnesium (Mg)-Dissolved			94.4		%		80-120	09-JUN-19
Manganese (Mn)-Dissolved			102.0		%		80-120	09-JUN-19
Molybdenum (Mo)-Dissolved			103.7		%		80-120	09-JUN-19
Nickel (Ni)-Dissolved			98.1		%		80-120	09-JUN-19
Potassium (K)-Dissolved			100.6		%		80-120	09-JUN-19
Selenium (Se)-Dissolved			98.7		%		80-120	09-JUN-19
Silicon (Si)-Dissolved			98.2		%		60-140	09-JUN-19
Silver (Ag)-Dissolved			96.3		%		80-120	09-JUN-19
Sodium (Na)-Dissolved			98.7		%		80-120	09-JUN-19
Strontium (Sr)-Dissolved			103.7		%		80-120	09-JUN-19
Thallium (Tl)-Dissolved			98.8		%		80-120	09-JUN-19
Tin (Sn)-Dissolved			101.7		%		80-120	09-JUN-19
Titanium (Ti)-Dissolved			97.0		%		80-120	09-JUN-19
Uranium (U)-Dissolved			101.5		%		80-120	09-JUN-19
Vanadium (V)-Dissolved			99.1		%		80-120	09-JUN-19
Zinc (Zn)-Dissolved			95.7		%		80-120	09-JUN-19
<b>WG3071759-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-19



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663019</b>							
<b>WG3071759-1</b>	<b>MB</b>	<b>NP</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668727</b>							
<b>WG3076361-26</b>	<b>LCS</b>							
Ammonia as N			102.5		%		85-115	12-JUN-19
<b>WG3076361-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrite (as N)			106.4		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrate (as N)			104.7		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4667329							
<b>WG3075443-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	12-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4663807							
<b>WG3074075-4</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.9		%		80-120	11-JUN-19
<b>WG3074075-3</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-JUN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4663807							
<b>WG3074075-4</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			100.9		%		80-120	11-JUN-19
<b>WG3074075-3</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	11-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4669583							
<b>WG3076067-17</b>	<b>LCS</b>							
pH			6.97		pH		6.9-7.1	12-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4661287							
<b>WG3070124-66</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.3		%		80-120	06-JUN-19
<b>WG3070124-6</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Sulfate (SO4)			105.8		%		90-110	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4663920							
<b>WG3074230-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4667930							
<b>WG3073552-11 LCS</b>								
Total Dissolved Solids			96.4		%		85-115	11-JUN-19
<b>WG3073552-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	11-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4670323							
<b>WG3077697-16 LCS</b>								
Total Kjeldahl Nitrogen			89.3		%		75-125	15-JUN-19
<b>WG3077697-18 LCS</b>								
Total Kjeldahl Nitrogen			91.5		%		75-125	15-JUN-19
<b>WG3077697-2 LCS</b>								
Total Kjeldahl Nitrogen			96.4		%		75-125	14-JUN-19
<b>WG3077697-22 LCS</b>								
Total Kjeldahl Nitrogen			92.5		%		75-125	15-JUN-19
<b>WG3077697-4 LCS</b>								
Total Kjeldahl Nitrogen			103.4		%		75-125	14-JUN-19
<b>WG3077697-6 LCS</b>								
Total Kjeldahl Nitrogen			116.6		%		75-125	14-JUN-19
<b>WG3077697-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>WG3077697-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19
<b>WG3077697-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19
<b>WG3077697-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19
<b>WG3077697-3 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>WG3077697-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4665072							
<b>WG3073472-5</b>	<b>LCS</b>							
Total Suspended Solids			107.4		%		85-115	11-JUN-19
<b>WG3073472-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	11-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4661885							
<b>WG3071389-23</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	07-JUN-19
<b>WG3071389-22</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-JUN-19

# Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2286798

Report Date: 18-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	05-JUN-19 10:00	12-JUN-19 11:20	0.25	169	hours	EHTR-FM
pH	1	05-JUN-19 10:00	12-JUN-19 12:00	0.25	170	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2286798 were received on 06-JUN-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID:

20190605Q2GW

TURNAROUND TIME:

RUSH:

## PROJECT/CLIENT INFO

Facility Name / Job: Elkview Operations

Job Description: Q2 Ground Water Sampling

Project Manager: Cameron Griffin

Email: Cameron.Griffin@teck.com

Address: RR#1 HWY#3

City: Sparwood

Postal Code: VIC 4C3

Phone Number: 1-250-865-5289

Province: BC

Country: Canada

## LABORATORY

Lab Name: ALS Calgary

Lab Contact: Lyndyia Shveits

Email: Lyndyia.Shveits@alsglobal.com

Address: 2559 29 St NE

City: Calgary

Postal Code: T1Y 7B5

Phone Number: 1 403 291 9897

Province: AB

Country: Canada

## OTHER INFO

Report Format / Distribution:

Excel

PDF

EDD

Email 1: Ryan.Ogden@teck.com

Email 2: teckcoal@equisonline.com

Email 3: kimberly.hackett@teck.com

Email 4: Cameron.Griffin@teck.com

Email 5: TeckLab.Perkins@equisonline.com

PQ #

VPO88618852

## SAMPLE DETAILS

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (2-hr)	G-Grab C=Comp	# Of Cont.	Filtered/Unfiltered/Preserved	ANALYSIS REQUESTED														
									TECKCOAL-ROUTINE-VA (EMIS 3)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/DOC (APHA 4500-NORG)	Total Nitrogen for BC (NO3 and NO2)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C18-C32)	D-Mercury				
EV_WF_SW_WG_2019-04_NP	EV_WF_SW	WG	N	6/5/2019	10:00	G	5																
Total							5																

## ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Ultra-trace Mercury samples are unfiltered and unpreserved  
Total Methyl Mercury samples are preserved but unfiltered  
Total Selenium samples are preserved but unfiltered  
Dissolved Selenium samples are preserved and filtered

## RELINQUISHED BY/AFFILIATION

Kimberly Hackett

## DATE/TIME

June 5, 2019

## ACCEPTED BY/AFFILIATION

## DATE/TIME

6/6/19

## NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency &lt;1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Kimberly Hackett

Mobile #

Sampler's Signature

Date/Time

June 5, 2019



L2286798-COFC

50



Teck Coal Ltd. (Elkview)  
ATTN: Allie Ferguson  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 12-JUN-19  
Report Date: 23-JUN-19 12:06 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2290109  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: EVO\_MW\_Q2-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2290109-1 WG 11-JUN-19 12:09 EV_MW_BC1- A_WG_Q2- 2019_NP	L2290109-2 WG 11-JUN-19 11:30 EV_MW_BC1- B_WG_Q2- 2019_NP	L2290109-3 WG 11-JUN-19 10:03 EV_MW_GC1- A_WG_Q2- 2019_NP	L2290109-4 WG 11-JUN-19 10:10 EV_MW_GC1- B_WG_Q2- 2019_NP	L2290109-5 WG 11-JUN-19 14:55 EV_MW_MC1- A_WG_Q2- 2019_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	1810	1920	535	781	899
	Hardness (as CaCO3) (mg/L)	1100	1160	282	399	411
	pH (pH)	8.16	8.17	8.21	8.10	8.24
	ORP (mV)	414	406	350	428	304
	Total Suspended Solids (mg/L)	27.8	13.5	<1.0	<1.0	7.7
	Total Dissolved Solids (mg/L)	1510 <sup>DLHC</sup>	1610 <sup>DLHC</sup>	337 <sup>DLHC</sup>	566 <sup>DLHC</sup>	547 <sup>DLHC</sup>
	Turbidity (NTU)	24.9	1.54	0.78	0.37	8.14
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.3	4.0	<1.0	1.6	8.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	276	275	205	160	378
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	276	275	205	160	378
	Ammonia as N (mg/L)	0.0064 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.101	<0.0050	1.28 <sup>DLHC</sup>
	Bromide (Br) (mg/L)	4.06 <sup>DLHC</sup>	4.36 <sup>DLHC</sup>	0.073	1.29	0.49 <sup>DLHC</sup>
	Chloride (Cl) (mg/L)	25.1 <sup>DLHC</sup>	28.4 <sup>DLHC</sup>	2.41	5.29	90.5 <sup>DLHC</sup>
	Fluoride (F) (mg/L)	0.28 <sup>DLHC</sup>	0.34 <sup>DLHC</sup>	0.161	0.186	0.37 <sup>DLHC</sup>
	Ion Balance (%)	94.4	94.6	91.6	91.7	92.2
	Nitrate (as N) (mg/L)	16.2 <sup>DLHC</sup>	18.0 <sup>DLHC</sup>	<0.0050	4.26	0.302 <sup>DLHC</sup>
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	0.0089 <sup>DLHC</sup>	<0.0010	<0.0010	0.0086 <sup>DLHC</sup>
	Total Kjeldahl Nitrogen (mg/L)	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	0.137	0.056 <sup>TKNI</sup>	1.59
	Total Nitrogen (mg/L)	16.2	18.1	0.137	4.32	1.90
	Orthophosphate-Dissolved (as P) (mg/L)	0.0097	0.0247 <sup>RRV</sup>	0.0050	0.0080	0.0011
	Phosphorus (P)-Total Dissolved (mg/L)	0.0114	0.018 <sup>RRV</sup>	0.0048	0.0070	0.0030
	Phosphorus (P)-Total (mg/L)	0.037 <sup>RHR</sup>	0.033 <sup>RHR</sup>	0.0046	0.0067	0.0078
	Sulfate (SO4) (mg/L)	798 <sup>DLHC</sup>	849 <sup>DLHC</sup>	104	254	7.8 <sup>DLHC</sup>
	Anion Sum (meq/L)	24.0	25.3	6.32	8.95	10.3
	Cation Sum (meq/L)	22.6	23.9	5.79	8.20	9.51
	Cation - Anion Balance (%)	-2.9	-2.8	-4.4	-4.3	-4.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.63	0.75	1.11	1.62
	Total Organic Carbon (mg/L)	1.73	0.60	0.91	1.24	1.39
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00087	0.00179	0.00011	0.00085	0.00036
	Arsenic (As)-Dissolved (mg/L)	0.00024	0.00022	0.00074	0.00023	0.00288

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2290109-6 WG 11-JUN-19 14:51 EV_MW_MC1- B_WG_Q2- 2019_NP	L2290109-7 WG 11-JUN-19 13:18 EV_MW_MC2- A_WG_Q2- 2019_NP	L2290109-8 WG 11-JUN-19 13:20 EV_MW_MC2- B_WG_Q2- 2019_NP	L2290109-9 WG 11-JUN-19 11:30 EV_MW_BC10- A_WG_Q2- 2019_NP	L2290109-10 WG 11-JUN-19 11:30 EV_MW_BC10- B_WG_Q2- 2019_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	1100	900	1170	1780	<2.0
	Hardness (as CaCO3) (mg/L)	515	389	674	1130	<0.50
	pH (pH)	8.21	8.24	7.76	8.04	5.68
	ORP (mV)	264	339	329	320	409
	Total Suspended Solids (mg/L)	34.5	3.7	<1.0	12.9	<1.0
	Total Dissolved Solids (mg/L)	683 <sup>DLHC</sup>	492 <sup>DLHC</sup>	940 <sup>DLHC</sup>	1620 <sup>DLHC</sup>	<10
	Turbidity (NTU)	163	18.7	0.28	1.32	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.4	4.9	4.0	<10 <sup>DLIS</sup>	1.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	381	399	250	276	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	381	399	250	276	<1.0
	Ammonia as N (mg/L)	0.290 <sup>DLHC</sup>	0.899 <sup>DLHM</sup>	0.0090 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050
	Bromide (Br) (mg/L)	0.85 <sup>DLHC</sup>	<0.25 <sup>DLHC</sup>	0.86 <sup>DLHC</sup>	4.32 <sup>DLHC</sup>	<0.050
	Chloride (Cl) (mg/L)	91.9 <sup>DLHC</sup>	78.7 <sup>DLHC</sup>	26.6 <sup>DLHC</sup>	28.4 <sup>DLHC</sup>	<0.50
	Fluoride (F) (mg/L)	0.28 <sup>DLHC</sup>	0.29 <sup>DLHC</sup>	0.16 <sup>DLHC</sup>	0.34 <sup>DLHC</sup>	<0.020
	Ion Balance (%)	96.4	95.9	92.2	92.3	0.0
	Nitrate (as N) (mg/L)	0.165 <sup>DLHC</sup>	0.118 <sup>DLHC</sup>	8.74 <sup>DLHC</sup>	17.9 <sup>DLHC</sup>	<0.0050
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0100 <sup>DLHC</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.340	0.859	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	<0.050
	Total Nitrogen (mg/L)	0.505	0.976	8.74	17.9	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0029	0.0200 <sup>RHR</sup>	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0124	0.0026	0.0028	0.020 <sup>RHR</sup>	<0.0020
	Phosphorus (P)-Total (mg/L)	0.019 <sup>RHR</sup>	0.0057 <sup>DLHC</sup>	0.0029 <sup>DLHC</sup>	0.026 <sup>DLHC</sup>	<0.0020
	Sulfate (SO4) (mg/L)	120 <sup>DLHC</sup>	<1.5 <sup>DLHC</sup>	424 <sup>DLHC</sup>	847 <sup>DLHC</sup>	<0.30
	Anion Sum (meq/L)	12.7	10.2	15.2	25.3	<0.10
	Cation Sum (meq/L)	12.3	9.81	14.0	23.3	<0.10
	Cation - Anion Balance (%)	-1.9	-2.1	-4.0	-4.0 <sup>RRV</sup>	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.34	0.59	<0.50	0.54 <sup>RRV</sup>	2.59 <sup>RRV</sup>
	Total Organic Carbon (mg/L)	2.45	<0.50	<0.50	<0.50	<0.50 <sup>DTC</sup>
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00010	0.00172	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00429	0.00150	0.00012	0.00019	<0.00010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2290109-11 WG 11-JUN-19 11:30 EV_MW_BC10- C_WG_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.16			
	ORP (mV)	460			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010 <sup>HTD</sup>			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2290109-1	L2290109-2	L2290109-3	L2290109-4	L2290109-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	11-JUN-19	11-JUN-19	11-JUN-19	11-JUN-19	11-JUN-19
		Sampled Time	12:09	11:30	10:03	10:10	14:55
		Client ID	EV_MW_BC1- A_WG_Q2- 2019_NP	EV_MW_BC1- B_WG_Q2- 2019_NP	EV_MW_GC1- A_WG_Q2- 2019_NP	EV_MW_GC1- B_WG_Q2- 2019_NP	EV_MW_MC1- A_WG_Q2- 2019_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0529	0.0411	0.0646	0.0358	11.2
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.042	0.051	0.012	0.018	0.076
	Cadmium (Cd)-Dissolved (ug/L)		0.188	0.322	<0.0050	0.0709	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		215	211	75.0	79.3	108
	Chromium (Cr)-Dissolved (mg/L)		0.00011	0.00012	<0.00010	0.00017	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		1.25	0.43	<0.10	0.11	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.010	<0.010	0.104	<0.010	0.536
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.158	0.171	0.0098	0.0396	0.156
	Magnesium (Mg)-Dissolved (mg/L)		138	154	22.9	48.9	34.6
	Manganese (Mn)-Dissolved (mg/L)		0.0193	0.00260	0.0988	0.00047	0.139
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00741	0.00946	0.00102	0.00330	0.00111
	Nickel (Ni)-Dissolved (mg/L)		0.00363	0.00545	<0.00050	0.00699	<0.00050
	Potassium (K)-Dissolved (mg/L)		5.71	7.56	0.888	2.64	5.09
	Selenium (Se)-Dissolved (ug/L)		133	152	<0.050	34.3	<0.050
	Silicon (Si)-Dissolved (mg/L)		3.23	2.93	2.91	2.32	3.80
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		10.0	11.0	2.90	3.67	23.8
	Strontium (Sr)-Dissolved (mg/L)		0.840	0.790	0.122	0.253	1.73
	Thallium (Tl)-Dissolved (mg/L)		0.000011	0.000028	<0.000010	0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00876	0.0101	0.00118	0.00307	0.00127
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.00052
	Zinc (Zn)-Dissolved (mg/L)		0.0050	0.0062	<0.0010	0.0020	0.0071

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2290109-6	L2290109-7	L2290109-8	L2290109-9	L2290109-10
					WG	WG	WG	WG	WG
		11-JUN-19	14:51	EV_MW_MC1- B_WG_Q2- 2019_NP	11-JUN-19 13:18	11-JUN-19 13:18	11-JUN-19 13:20	11-JUN-19 11:30	11-JUN-19 11:30
					EV_MW_MC2- A_WG_Q2- 2019_NP	EV_MW_MC2- A_WG_Q2- 2019_NP	EV_MW_MC2- B_WG_Q2- 2019_NP	EV_MW_BC10- A_WG_Q2- 2019_NP	EV_MW_BC10- B_WG_Q2- 2019_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	1.12	5.59	0.0562	0.0416	0.00047 <sup>RRV</sup>			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.045	0.064	0.026	0.049	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	0.114	0.292	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	132	99.6	161	201	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	0.00019	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.22	<0.10	<0.10	0.43	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	11.0	1.07	<0.010	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.130	0.227	0.0532	0.165	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	44.9	34.1	66.1	153	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	0.522	0.0577	<0.00010	0.00271	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00206	0.000286	0.000641	0.00919	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	0.00059	<0.00050	0.00063	0.00545	<0.00050			
	Potassium (K)-Dissolved (mg/L)	3.72	3.85	2.31	7.39	<0.050			
	Selenium (Se)-Dissolved (ug/L)	0.056	<0.050	56.5	149	<0.050			
	Silicon (Si)-Dissolved (mg/L)	5.15	4.08	3.56	2.95	0.060 <sup>RRV</sup>			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	29.0	41.7	11.3	11.0	0.064 <sup>RRV</sup>			
	Strontium (Sr)-Dissolved (mg/L)	0.857	1.42	0.342	0.735	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000011	0.000026	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00024	0.00014 <sup>RRV</sup>			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000620	0.000048	0.00162	0.0100	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0012	0.0041	0.0016	0.0083	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2290109-11 WG 11-JUN-19 11:30 EV_MW_BC10- C_WG_Q2- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	0.00013 <sup>RRV</sup>			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00021 <sup>RRV</sup>			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO <sub>3</sub> )	MB-LOR	L2290109-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2290109-10, -11
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2290109-10, -11
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2290109-10, -11
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2290109-10, -11

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLHM	Detection Limit Adjusted: Sample has High Moisture Content
DLIS	Detection Limit Adjusted: Insufficient Sample
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RHR	Reported Highest Result: Sample is not homogenous.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**COLOUR-TRUE-CL** Water Colour (True) by Spectrometer APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended

## Reference Information

hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS  
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C  
 A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E  
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)  
 This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric  
 This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer  
 This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

EVO\_MW\_Q2-2019

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 1 of 13

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4675228</b>							
<b>WG3081912-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.2		%		85-115	19-JUN-19
<b>WG3081912-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	19-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672555</b>							
<b>WG3080155-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	17-JUN-19
<b>WG3080155-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			1.1	MB-LOR	mg/L		1	17-JUN-19
<b>Batch</b>	<b>R4672773</b>							
<b>WG3080752-3</b>	<b>DUP</b>	<b>L2290109-8</b>						
Alkalinity, Total (as CaCO3)		250	257		mg/L	2.6	20	18-JUN-19
<b>WG3080752-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	18-JUN-19
<b>WG3080752-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	18-JUN-19
<b>Batch</b>	<b>R4675267</b>							
<b>WG3081882-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.9		%		85-115	19-JUN-19
<b>WG3081882-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076766-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.7		%		80-120	14-JUN-19
<b>WG3076766-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670148</b>							
<b>WG3077550-2</b>	<b>LCS</b>							
Bromide (Br)			100.6		%		85-115	13-JUN-19
<b>WG3077550-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672407</b>							
<b>WG3080315-3</b>	<b>DUP</b>	<b>L2290109-6</b>						
Dissolved Organic Carbon		2.34	2.21		mg/L	6.0	20	17-JUN-19
<b>WG3080315-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			112.6		%		80-120	17-JUN-19
<b>WG3080315-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.1		%		80-120	17-JUN-19
<b>WG3080315-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>WG3080315-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>WG3080315-4</b>	<b>MS</b>	<b>L2290109-7</b>						
Dissolved Organic Carbon			106.1		%		70-130	17-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672407</b>							
<b>WG3080315-3</b>	<b>DUP</b>	<b>L2290109-6</b>						
Total Organic Carbon		2.45	2.01		mg/L	20	20	17-JUN-19
<b>WG3080315-2</b>	<b>LCS</b>							
Total Organic Carbon			111.3		%		80-120	17-JUN-19
<b>WG3080315-6</b>	<b>LCS</b>							
Total Organic Carbon			111.2		%		80-120	17-JUN-19
<b>WG3080315-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>WG3080315-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	17-JUN-19
<b>WG3080315-4</b>	<b>MS</b>	<b>L2290109-7</b>						
Total Organic Carbon			99.9		%		70-130	17-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670148</b>							
<b>WG3077550-2</b>	<b>LCS</b>							
Chloride (Cl)			100.4		%		90-110	13-JUN-19
<b>WG3077550-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-JUN-19
<b>COLOUR-TRUE-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4669599</b>							
<b>WG3076761-6</b>	<b>DUP</b>	<b>L2290109-9</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	13-JUN-19
<b>WG3076761-5</b>	<b>LCS</b>							
Colour, True			101.0		%		85-115	13-JUN-19

## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
Batch	R4669599							
<b>WG3076761-8</b>	<b>LCS</b>							
Colour, True			100.2		%		85-115	13-JUN-19
<b>WG3076761-4</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	13-JUN-19
<b>WG3076761-7</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	13-JUN-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4672555							
<b>WG3080155-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			102.7		%		90-110	17-JUN-19
<b>WG3080155-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUN-19
Batch	R4672773							
<b>WG3080752-3</b>	<b>DUP</b>	<b>L2290109-8</b>						
Conductivity (@ 25C)		1170	1160		uS/cm	0.6	10	18-JUN-19
<b>WG3080752-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.2		%		90-110	18-JUN-19
<b>WG3080752-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	18-JUN-19
Batch	R4675267							
<b>WG3081882-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.8		%		90-110	19-JUN-19
<b>WG3081882-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4670148							
<b>WG3077550-2</b>	<b>LCS</b>							
Fluoride (F)			103.7		%		90-110	13-JUN-19
<b>WG3077550-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-JUN-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4671970							
<b>WG3079404-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.3		%		80-120	17-JUN-19
<b>WG3079404-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	17-JUN-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076766-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.0		%		80-120	14-JUN-19
Antimony (Sb)-Dissolved			94.0		%		80-120	14-JUN-19
Arsenic (As)-Dissolved			101.2		%		80-120	14-JUN-19
Barium (Ba)-Dissolved			110.4		%		80-120	14-JUN-19
Bismuth (Bi)-Dissolved			99.7		%		80-120	14-JUN-19
Boron (B)-Dissolved			104.7		%		80-120	14-JUN-19
Cadmium (Cd)-Dissolved			101.0		%		80-120	14-JUN-19
Calcium (Ca)-Dissolved			99.8		%		80-120	14-JUN-19
Chromium (Cr)-Dissolved			103.3		%		80-120	14-JUN-19
Cobalt (Co)-Dissolved			103.1		%		80-120	14-JUN-19
Copper (Cu)-Dissolved			100.3		%		80-120	14-JUN-19
Iron (Fe)-Dissolved			97.1		%		80-120	14-JUN-19
Lead (Pb)-Dissolved			100.6		%		80-120	14-JUN-19
Lithium (Li)-Dissolved			104.1		%		80-120	14-JUN-19
Magnesium (Mg)-Dissolved			102.0		%		80-120	14-JUN-19
Manganese (Mn)-Dissolved			110.4		%		80-120	14-JUN-19
Molybdenum (Mo)-Dissolved			95.4		%		80-120	14-JUN-19
Nickel (Ni)-Dissolved			100.4		%		80-120	14-JUN-19
Potassium (K)-Dissolved			105.4		%		80-120	14-JUN-19
Selenium (Se)-Dissolved			95.2		%		80-120	14-JUN-19
Silicon (Si)-Dissolved			119.0		%		60-140	14-JUN-19
Silver (Ag)-Dissolved			91.7		%		80-120	14-JUN-19
Sodium (Na)-Dissolved			103.2		%		80-120	14-JUN-19
Strontium (Sr)-Dissolved			96.5		%		80-120	14-JUN-19
Thallium (Tl)-Dissolved			101.1		%		80-120	14-JUN-19
Tin (Sn)-Dissolved			95.7		%		80-120	14-JUN-19
Titanium (Ti)-Dissolved			95.2		%		80-120	14-JUN-19
Uranium (U)-Dissolved			100.1		%		80-120	14-JUN-19
Vanadium (V)-Dissolved			102.8		%		80-120	14-JUN-19
Zinc (Zn)-Dissolved			99.1		%		80-120	14-JUN-19
<b>WG3076766-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670581</b>							
<b>WG3076766-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-JUN-19
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-3</b>	<b>DUP</b>	<b>L2290109-11</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-JUN-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-19
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-19





## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-3</b>	<b>DUP</b>	<b>L2290109-11</b>						
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUN-19
Cadmium (Cd)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-19
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-JUN-19
Chromium (Cr)-Dissolved		0.00013	0.00013		mg/L	4.3	20	15-JUN-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-JUN-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUN-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-19
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-JUN-19
Magnesium (Mg)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	15-JUN-19
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUN-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-JUN-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-JUN-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUN-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUN-19
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	15-JUN-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	15-JUN-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUN-19
Tin (Sn)-Dissolved		0.00021	0.00014	J	mg/L	0.00007	0.0002	15-JUN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUN-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUN-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-JUN-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-JUN-19
<b>WG3078219-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.7		%		80-120	15-JUN-19
Antimony (Sb)-Dissolved			96.2		%		80-120	15-JUN-19
Arsenic (As)-Dissolved			98.7		%		80-120	15-JUN-19
Barium (Ba)-Dissolved			96.8		%		80-120	15-JUN-19
Bismuth (Bi)-Dissolved			99.8		%		80-120	15-JUN-19
Boron (B)-Dissolved			103.3		%		80-120	15-JUN-19
Cadmium (Cd)-Dissolved			98.6		%		80-120	15-JUN-19
Calcium (Ca)-Dissolved			100.5		%		80-120	15-JUN-19
Chromium (Cr)-Dissolved			98.2		%		80-120	15-JUN-19



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-2</b>	<b>LCS</b>							
Cobalt (Co)-Dissolved			98.4		%		80-120	15-JUN-19
Copper (Cu)-Dissolved			98.4		%		80-120	15-JUN-19
Iron (Fe)-Dissolved			100.5		%		80-120	15-JUN-19
Lead (Pb)-Dissolved			99.7		%		80-120	15-JUN-19
Lithium (Li)-Dissolved			90.4		%		80-120	15-JUN-19
Magnesium (Mg)-Dissolved			104.7		%		80-120	15-JUN-19
Manganese (Mn)-Dissolved			98.0		%		80-120	15-JUN-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	15-JUN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	15-JUN-19
Potassium (K)-Dissolved			101.3		%		80-120	15-JUN-19
Selenium (Se)-Dissolved			98.2		%		80-120	15-JUN-19
Silicon (Si)-Dissolved			100.5		%		60-140	15-JUN-19
Silver (Ag)-Dissolved			100.1		%		80-120	15-JUN-19
Sodium (Na)-Dissolved			110.5		%		80-120	15-JUN-19
Strontium (Sr)-Dissolved			105.3		%		80-120	15-JUN-19
Thallium (Tl)-Dissolved			100.1		%		80-120	15-JUN-19
Tin (Sn)-Dissolved			100.9		%		80-120	15-JUN-19
Titanium (Ti)-Dissolved			91.7		%		80-120	15-JUN-19
Uranium (U)-Dissolved			100.4		%		80-120	15-JUN-19
Vanadium (V)-Dissolved			99.7		%		80-120	15-JUN-19
Zinc (Zn)-Dissolved			96.9		%		80-120	15-JUN-19
<b>WG3078219-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUN-19



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670974</b>							
<b>WG3078219-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672589</b>							
<b>WG3079827-26</b>	<b>LCS</b>							
Ammonia as N			103.7		%		85-115	17-JUN-19
<b>WG3079827-30</b>	<b>LCS</b>							
Ammonia as N			103.4		%		85-115	17-JUN-19
<b>WG3079827-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-19
<b>WG3079827-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	17-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670148</b>							
<b>WG3077550-2</b>	<b>LCS</b>							
Nitrite (as N)			102.2		%		90-110	13-JUN-19
<b>WG3077550-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
Batch R4670148								
WG3077550-2	LCS							
Nitrate (as N)			100.4		%		90-110	13-JUN-19
WG3077550-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	13-JUN-19
<b>ORP-CL</b>								
Batch R4672223								
WG3080115-1	CRM	CL-ORP						
ORP			225		mV		210-230	17-JUN-19
WG3080115-3	CRM	CL-ORP						
ORP			228		mV		210-230	17-JUN-19
WG3080115-4	DUP	L2290109-11						
ORP			460	J	mV	8.3	15	17-JUN-19
<b>P-T-L-COL-CL</b>								
Batch R4670347								
WG3077788-10	LCS							
Phosphorus (P)-Total			97.9		%		80-120	14-JUN-19
WG3077788-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	14-JUN-19
<b>P-TD-L-COL-CL</b>								
Batch R4670347								
WG3077788-10	LCS							
Phosphorus (P)-Total Dissolved			97.9		%		80-120	14-JUN-19
WG3077788-9	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	14-JUN-19
<b>PH-CL</b>								
Batch R4672555								
WG3080155-17	LCS							
pH			7.01		pH		6.9-7.1	17-JUN-19
Batch R4672773								
WG3080752-3	DUP	L2290109-8						
pH			7.76	J	pH	0.14	0.2	18-JUN-19
WG3080752-2	LCS							
pH			7.02		pH		6.9-7.1	18-JUN-19



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4675267							
<b>WG3081882-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	19-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4669863							
<b>WG3076831-5</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.6		%		80-120	13-JUN-19
<b>WG3076831-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4670148							
<b>WG3077550-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.1		%		90-110	13-JUN-19
<b>WG3077550-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	13-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4674626							
<b>WG3080238-5</b>	<b>LCS</b>							
Total Dissolved Solids			105.3		%		85-115	18-JUN-19
<b>WG3080238-8</b>	<b>LCS</b>							
Total Dissolved Solids			107.2		%		85-115	18-JUN-19
<b>WG3080238-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-JUN-19
<b>WG3080238-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4674011							
<b>WG3081707-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.7		%		75-125	19-JUN-19
<b>WG3081707-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.7		%		75-125	19-JUN-19
<b>WG3081707-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	19-JUN-19
<b>WG3081707-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.3		%		75-125	19-JUN-19
<b>WG3081707-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.2		%		75-125	19-JUN-19
<b>WG3081707-25</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4674011</b>							
<b>WG3081707-25</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.7		%		75-125	19-JUN-19
<b>WG3081707-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.6		%		75-125	19-JUN-19
<b>WG3081707-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-24</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	19-JUN-19
<b>WG3081707-23</b>	<b>MS</b>	<b>L2290109-11</b>						
Total Kjeldahl Nitrogen			110.2		%		70-130	19-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4674170</b>							
<b>WG3081379-2</b>	<b>LCS</b>							
Total Suspended Solids			91.9		%		85-115	18-JUN-19
<b>WG3081379-4</b>	<b>LCS</b>							
Total Suspended Solids			96.9		%		85-115	18-JUN-19
<b>WG3081379-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-JUN-19
<b>WG3081379-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4669835</b>							
<b>WG3076678-11</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	13-JUN-19
<b>WG3076678-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	13-JUN-19

# Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2290109

Report Date: 23-JUN-19

Page 13 of 13

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	11-JUN-19 12:09	17-JUN-19 10:55	0.25	143	hours	EHTR-FM
	2	11-JUN-19 11:30	17-JUN-19 10:55	0.25	144	hours	EHTR-FM
	3	11-JUN-19 10:03	17-JUN-19 10:55	0.25	145	hours	EHTR-FM
	4	11-JUN-19 10:10	17-JUN-19 10:55	0.25	145	hours	EHTR-FM
	5	11-JUN-19 14:55	17-JUN-19 10:55	0.25	140	hours	EHTR-FM
	6	11-JUN-19 14:51	17-JUN-19 10:55	0.25	140	hours	EHTR-FM
	7	11-JUN-19 13:18	17-JUN-19 10:55	0.25	142	hours	EHTR-FM
	8	11-JUN-19 13:20	17-JUN-19 10:55	0.25	142	hours	EHTR-FM
	9	11-JUN-19 11:30	17-JUN-19 10:55	0.25	144	hours	EHTR-FM
	10	11-JUN-19 11:30	17-JUN-19 10:55	0.25	144	hours	EHTR-FM
	11	11-JUN-19 11:30	17-JUN-19 10:55	0.25	144	hours	EHTR-FM
pH							
	1	11-JUN-19 12:09	17-JUN-19 10:00	0.25	142	hours	EHTR-FM
	2	11-JUN-19 11:30	17-JUN-19 10:00	0.25	143	hours	EHTR-FM
	3	11-JUN-19 10:03	17-JUN-19 10:00	0.25	144	hours	EHTR-FM
	4	11-JUN-19 10:10	17-JUN-19 10:00	0.25	144	hours	EHTR-FM
	5	11-JUN-19 14:55	17-JUN-19 10:00	0.25	139	hours	EHTR-FM
	6	11-JUN-19 14:51	17-JUN-19 10:00	0.25	139	hours	EHTR-FM
	7	11-JUN-19 13:18	17-JUN-19 10:00	0.25	141	hours	EHTR-FM
	8	11-JUN-19 13:20	18-JUN-19 09:00	0.25	164	hours	EHTR-FM
	9	11-JUN-19 11:30	18-JUN-19 09:00	0.25	166	hours	EHTR-FM
	10	11-JUN-19 11:30	19-JUN-19 09:00	0.25	190	hours	EHTR-FM
	11	11-JUN-19 11:30	19-JUN-19 09:00	0.25	190	hours	EHTR-FM

**Anions and Nutrients**

Orthophosphate-Dissolved (as P)

11	11-JUN-19 11:30	22-JUN-19 15:00	3	11	days	EHT
----	-----------------	-----------------	---	----	------	-----

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

**Notes\*:**

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2290109 were received on 12-JUN-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.




<b>COC ID:</b> EVO_MW_Q2-2019		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave.			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kimberley.Hackett@teck.co	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	cameron.griffin@teck.com	X	X	X
Phone Number	250-425-8048			Phone Number	403-407-1800			PO number				

SAMPLE DETAILS							ANALYSIS REQUESTED										
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com # Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N	
<del>EV_MW_AQ1-WG_Q2-2019-NP</del>	<del>EV_MW_AQ1</del>	<del>WG</del>				G 5											
<del>EV_MW_GCI-A-WG_Q2-2019-NP</del>	<del>EV_MW_GCI-A</del>	<del>WG</del>				G 5											
EV_MW_BCI-A-WG_Q2-2019-NP	EV_MW_BCI-A	WG		June 11/19	12:09	G 5	1	1	1	1	1	1					
EV_MW_BCI-B-WG_Q2-2019-NP	EV_MW_BCI-B	WG		June 11/19	11:30	G 5	1	1	1	1	1	1					
EV_MW_GCI-A-WG_Q2-2019-NP	EV_MW_GCI-A	WG		June 11/19	10:03	G 5	1	1	1	1	1	1					
EV_MW_GCI-B-WG_Q2-2019-NP	EV_MW_GCI-B	WG		June 11/19	10:10	G 5	1	1	1	1	1	1					
EV_MW_MCI-A-WG_Q2-2019-NP	EV_MW_MCI-A	WG		June 11/19	14:55	G 5	1	1	1	1	1	1					
EV_MW_MCI-B-WG_Q2-2019-NP	EV_MW_MCI-B	WG		June 11/19	14:51	G 5	1	1	1	1	1	1					
EV_MW_MC2-A-WG_Q2-2019-NP	EV_MW_MC2-A	WG		June 11/19	13:18	G 5	1	1	1	1	1	1					
EV_MW_MC2-B-WG_Q2-2019-NP	EV_MW_MC2-B	WG		June 11/19	13:20	G 5	1	1	1	1	1	1					

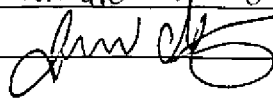
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	6/12/2019

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>	<b>Mobile #</b>
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Jennifer deWerk	250-410-7857
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>[Signature]</i>	<b>Date/Time</b>
			June 11, 2019

<b>COC ID:</b> EVO_MW_Q2-2019		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Job Description	Q2 Groundwater Sampling			Lab Contact	Lyudmyla Shvets		Email 1:	allie.ferguson@teck.com	X	X	X	
Project Manager	Allie Ferguson			Email	lyudmyla.shvets@alsglobal.com		Email 2:	jennifer.dawark@teck.com	X	X	X	
Email	allie.ferguson@teck.com			Address	2559 29 Street NE		Email 3:	teckcoal@equisonline.com	X	X	X	
Address	421 Pine Ave						Email 4:	kimberley.hackett@teck.co	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	cameron.griffin@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8048			Phone Number	403-407-1800		PO number					

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered [F] Field, [L] Lab, [F] Field & Lab, [N] None											
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N						
 L2290109-COFC																							
<del>EV_MW_MC3_WG_Q2-2019_NP</del>	<del>EV_MW_MC3</del>	<del>WG</del>																					
<del>EV_MW_MC4_WG_Q2-2019_NP</del>	<del>EV_MW_MC4</del>	<del>WG</del>				G	5																
<del>EV_MW_MC5_WG_Q2-2019_NP</del>	<del>EV_MW_MC5</del>	<del>WG</del>																					
<del>EV_MW_SCI-A_WG_Q2-2019_NP</del>	<del>EV_MW_SCI-A</del>	<del>WG</del>																					
<del>EV_MW_SCI-B_WG_Q2-2019_NP</del>	<del>EV_MW_SCI-B</del>	<del>WG</del>																					
<del>EV_MW_SCI-C_WG_Q2-2019_NP</del>	<del>EV_MW_SCI-C</del>	<del>WG</del>																					
EV_MW_BC10-A_WG_Q2-2019_NP	EV_MW_BC10-A	WG		June 11	11:30	G	5						1	1	1								
EV_MW_BC10-B_WG_Q2-2019_NP	EV_MW_BC10-B	WG		June 11	11:30	G	5						1	1	1								
EV_MW_BC10-C_WG_Q2-2019_NP	EV_MW_BC10-C	WG		June 11	11:30	G	5						1	1	1								

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
<b>Sampler's Name</b>	Jennifer deWerk	<b>Mobile #</b>	250-910-7287	
<b>Sampler's Signature</b>		<b>Date/Time</b>	June 11, 2019	



Teck Coal Ltd. (Elkview)  
ATTN: Allie Ferguson  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 13-JUN-19  
Report Date: 21-JUN-19 12:15 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2291323  
Project P.O. #: VPO00604897  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: EVO\_MW\_Q2-2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2291323-1	L2291323-2	L2291323-3	L2291323-4
		Description	WG	WG	WG	WG
		Sampled Date	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19
		Sampled Time	11:45	09:03	12:02	09:03
		Client ID	EV_MW_MC3_WG _Q2-2019_NP	EV_MW_SC1- A_WG_Q2- 2019_NP	EV_MW_SC1- B_WG_Q2- 2019_NP	EV_MW_SC1- C_WG_Q2- 2019_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)		768	623	541	498
	Hardness (as CaCO3) (mg/L)		143	357	172	261
	pH (pH)		8.37	8.15	8.34	8.34
	ORP (mV)		398	372	329	444
	Total Suspended Solids (mg/L)		35.2	45.8	31.7	<1.0
	Total Dissolved Solids (mg/L)		468 <sup>DLHC</sup>	401 <sup>DLHC</sup>	341 <sup>DLHC</sup>	301 <sup>DLHC</sup>
	Turbidity (NTU)		38.4	17.0	53.8	0.28
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	12.5	<1.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		335	301	203	204
	Alkalinity, Carbonate (as CaCO3) (mg/L)		8.6	<1.0	3.8	4.8
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		344	301	207	209
	Ammonia as N (mg/L)		0.0621	0.0805	0.225	0.0119
	Bromide (Br) (mg/L)		0.082	<0.050	<0.050	0.067
	Chloride (Cl) (mg/L)		12.4	17.0	3.62	6.21
	Fluoride (F) (mg/L)		1.65	0.272	1.27	0.183
	Ion Balance (%)		98.1	107	92.6	97.4
	Nitrate (as N) (mg/L)		0.531	<0.0050	0.0053	0.247
	Nitrite (as N) (mg/L)		0.102	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.139	0.134	0.273	0.051
	Total Nitrogen (mg/L)		0.772	0.134	0.279	0.298
	Orthophosphate-Dissolved (as P) (mg/L)		0.0109	<0.0010	<0.0010	0.0018
	Phosphorus (P)-Total Dissolved (mg/L)		0.0133	0.0021	0.0027	0.0027
	Phosphorus (P)-Total (mg/L)		0.0638	0.0360	0.0442	0.0030
	Sulfate (SO4) (mg/L)		63.3	37.0	86.5	58.3
	Anion Sum (meq/L)		8.66	7.28	6.11	5.58
	Cation Sum (meq/L)		8.50	7.78	5.66	5.44
	Cation - Anion Balance (%)		-0.9	3.3	-3.8	-1.3
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		2.08	1.83	1.47	1.63
	Total Organic Carbon (mg/L)		2.26	1.77	1.69	1.39
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0040	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		0.00011	<0.00010	0.00044	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00107	0.00136	0.00085	0.00011

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2291323-1	L2291323-2	L2291323-3	L2291323-4
		Description	WG	WG	WG	WG
		Sampled Date	12-JUN-19	12-JUN-19	12-JUN-19	12-JUN-19
		Sampled Time	11:45	09:03	12:02	09:03
		Client ID	EV_MW_MC3_WG_Q2-2019_NP	EV_MW_SC1-A_WG_Q2-2019_NP	EV_MW_SC1-B_WG_Q2-2019_NP	EV_MW_SC1-C_WG_Q2-2019_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.159	0.412	0.0547	0.106
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.095	0.027	0.145	0.013
	Cadmium (Cd)-Dissolved (ug/L)		0.0205	<0.0050	0.0061	0.0382
	Calcium (Ca)-Dissolved (mg/L)		34.4	91.0	39.6	68.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00016
	Cobalt (Co)-Dissolved (ug/L)		<0.10	0.57	0.16	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.343	0.043	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.130	0.0176	0.0143	0.0116
	Magnesium (Mg)-Dissolved (mg/L)		14.0	31.5	17.7	21.7
	Manganese (Mn)-Dissolved (mg/L)		0.0393	0.339	0.0950	0.00020
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.0205	0.00168	0.0227	0.000789
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00140	0.00066	<0.00050
	Potassium (K)-Dissolved (mg/L)		0.932	2.38	1.75	1.03
	Selenium (Se)-Dissolved (ug/L)		4.92	0.077	0.163	4.62
	Silicon (Si)-Dissolved (mg/L)		2.76	3.89	3.86	2.45
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		129	12.7	49.7	4.51
	Strontium (Sr)-Dissolved (mg/L)		0.185	0.333	0.505	0.148
	Thallium (Tl)-Dissolved (mg/L)		0.000012	<0.000010	0.000011	<0.000010
	Tin (Sn)-Dissolved (mg/L)		0.00011	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000854	0.00303	0.00478	0.000942
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0011	<0.0010	0.0052	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2291323-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2291323-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2291323-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2291323-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2291323-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2291323-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
<p>True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C.			

## Reference Information

The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

EVO\_MW\_Q2-2019

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677928</b>							
<b>WG3082902-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	19-JUN-19
<b>WG3082902-13</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	19-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677888</b>							
<b>WG3082781-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.7		%		85-115	19-JUN-19
<b>WG3082781-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.1		%		80-120	18-JUN-19
<b>WG3079789-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672521</b>							
<b>WG3080454-6</b>	<b>LCS</b>							
Bromide (Br)			108.1		%		85-115	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673907</b>							
<b>WG3081644-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			115.6		%		80-120	18-JUN-19
<b>WG3081644-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.6		%		80-120	18-JUN-19
<b>WG3081644-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JUN-19
<b>WG3081644-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	18-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673907</b>							
<b>WG3081644-10</b>	<b>LCS</b>							
Total Organic Carbon			119.1		%		80-120	18-JUN-19
<b>WG3081644-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch	R4673907							
<b>WG3081644-6</b>	<b>LCS</b>							
Total Organic Carbon			103.4		%		80-120	18-JUN-19
<b>WG3081644-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-JUN-19
<b>WG3081644-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	18-JUN-19
<b>CL-IC-N-CL</b>								
Batch	R4672521							
<b>WG3080454-6</b>	<b>LCS</b>							
Chloride (Cl)			109.7		%		90-110	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	14-JUN-19
<b>COLOUR-TRUE-CL</b>								
Batch	R4670537							
<b>WG3077667-2</b>	<b>LCS</b>							
Colour, True			99.97		%		85-115	14-JUN-19
<b>WG3077667-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	14-JUN-19
<b>EC-L-PCT-CL</b>								
Batch	R4677888							
<b>WG3082781-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.6		%		90-110	19-JUN-19
<b>WG3082781-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUN-19
<b>F-IC-N-CL</b>								
Batch	R4672521							
<b>WG3080454-6</b>	<b>LCS</b>							
Fluoride (F)			107.5		%		90-110	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	14-JUN-19
<b>HG-D-CVAA-VA</b>								
Batch	R4677175							
<b>WG3081889-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			94.5		%		80-120	20-JUN-19
<b>WG3082499-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			92.2		%		80-120	20-JUN-19
<b>WG3081889-1</b>	<b>MB</b>	<b>NP</b>						



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677175</b>							
<b>WG3081889-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-19
<b>WG3082499-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	18-JUN-19
Antimony (Sb)-Dissolved			95.9		%		80-120	18-JUN-19
Arsenic (As)-Dissolved			93.8		%		80-120	18-JUN-19
Barium (Ba)-Dissolved			98.2		%		80-120	18-JUN-19
Bismuth (Bi)-Dissolved			98.5		%		80-120	18-JUN-19
Boron (B)-Dissolved			97.6		%		80-120	18-JUN-19
Cadmium (Cd)-Dissolved			96.2		%		80-120	18-JUN-19
Calcium (Ca)-Dissolved			98.9		%		80-120	18-JUN-19
Chromium (Cr)-Dissolved			97.2		%		80-120	18-JUN-19
Cobalt (Co)-Dissolved			95.6		%		80-120	18-JUN-19
Copper (Cu)-Dissolved			94.5		%		80-120	18-JUN-19
Iron (Fe)-Dissolved			96.5		%		80-120	18-JUN-19
Lead (Pb)-Dissolved			100.3		%		80-120	18-JUN-19
Lithium (Li)-Dissolved			102.8		%		80-120	18-JUN-19
Magnesium (Mg)-Dissolved			101.9		%		80-120	18-JUN-19
Manganese (Mn)-Dissolved			97.9		%		80-120	18-JUN-19
Molybdenum (Mo)-Dissolved			99.1		%		80-120	18-JUN-19
Nickel (Ni)-Dissolved			95.9		%		80-120	18-JUN-19
Potassium (K)-Dissolved			99.6		%		80-120	18-JUN-19
Selenium (Se)-Dissolved			96.5		%		80-120	18-JUN-19
Silicon (Si)-Dissolved			98.2		%		60-140	18-JUN-19
Silver (Ag)-Dissolved			97.3		%		80-120	18-JUN-19
Sodium (Na)-Dissolved			98.0		%		80-120	18-JUN-19
Strontium (Sr)-Dissolved			98.9		%		80-120	18-JUN-19
Thallium (Tl)-Dissolved			103.3		%		80-120	18-JUN-19
Tin (Sn)-Dissolved			97.6		%		80-120	18-JUN-19
Titanium (Ti)-Dissolved			87.7		%		80-120	18-JUN-19
Uranium (U)-Dissolved			101.6		%		80-120	18-JUN-19



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673044</b>							
<b>WG3079789-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			98.8		%		80-120	18-JUN-19
Zinc (Zn)-Dissolved			94.4		%		80-120	18-JUN-19
<b>WG3079789-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>	<b>Water</b>							
Batch	R4676326							
<b>WG3081824-14</b>	<b>LCS</b>							
Ammonia as N			111.6		%		85-115	18-JUN-19
<b>WG3081824-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	18-JUN-19
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4672521							
<b>WG3080454-6</b>	<b>LCS</b>							
Nitrite (as N)			109.6		%		90-110	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	14-JUN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4672521							
<b>WG3080454-6</b>	<b>LCS</b>							
Nitrate (as N)			107.6		%		90-110	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	14-JUN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4673389							
<b>WG3081363-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	18-JUN-19
<b>WG3081363-6</b>	<b>DUP</b>	<b>L2291323-4</b>						
ORP		444	439	J	mV	5.0	15	18-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4671930							
<b>WG3079667-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			99.8		%		80-120	17-JUN-19
<b>WG3079667-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-JUN-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4671930							
<b>WG3079667-6</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			99.8		%		80-120	17-JUN-19
<b>WG3079667-5</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	17-JUN-19
<b>PH-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4677888							
<b>WG3082781-14</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	19-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4671777							
<b>WG3078103-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			94.9		%		80-120	14-JUN-19
<b>WG3078103-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-JUN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4672521							
<b>WG3080454-6</b>	<b>LCS</b>							
Sulfate (SO4)			109.9		%		90-110	14-JUN-19
<b>WG3080454-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	14-JUN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4678527							
<b>WG3081471-12</b>	<b>DUP</b>	<b>L2291323-2</b>						
Total Dissolved Solids		401	393		mg/L	2.0	20	19-JUN-19
<b>WG3081471-11</b>	<b>LCS</b>							
Total Dissolved Solids			89.6		%		85-115	19-JUN-19
<b>WG3081471-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	19-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4678328							
<b>WG3083285-13</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.2		%		75-125	20-JUN-19
<b>WG3083285-17</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.2		%		75-125	20-JUN-19
<b>WG3083285-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.4		%		75-125	20-JUN-19
<b>WG3083285-21</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.6		%		75-125	20-JUN-19
<b>WG3083285-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.6		%		75-125	20-JUN-19
<b>WG3083285-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.6		%		75-125	20-JUN-19
<b>WG3083285-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4678328</b>							
<b>WG3083285-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>WG3083285-12 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>WG3083285-16 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>WG3083285-20 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>WG3083285-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>WG3083285-8 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4677728</b>							
<b>WG3081473-8 LCS</b>								
Total Suspended Solids			98.8		%		85-115	19-JUN-19
<b>WG3081473-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	19-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4670712</b>							
<b>WG3077894-11 LCS</b>								
Turbidity			96.0		%		85-115	14-JUN-19
<b>WG3077894-14 LCS</b>								
Turbidity			96.5		%		85-115	14-JUN-19
<b>WG3077894-10 MB</b>								
Turbidity			<0.10		NTU		0.1	14-JUN-19
<b>WG3077894-13 MB</b>								
Turbidity			<0.10		NTU		0.1	14-JUN-19

# Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---



# Quality Control Report

Workorder: L2291323

Report Date: 21-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	12-JUN-19 11:45	18-JUN-19 10:37	0.25	143	hours	EHTR-FM
	2	12-JUN-19 09:03	18-JUN-19 10:37	0.25	146	hours	EHTR-FM
	3	12-JUN-19 12:02	18-JUN-19 10:37	0.25	143	hours	EHTR-FM
	4	12-JUN-19 09:03	18-JUN-19 10:37	0.25	146	hours	EHTR-FM
pH							
	1	12-JUN-19 11:45	19-JUN-19 12:00	0.25	168	hours	EHTR-FM
	2	12-JUN-19 09:03	19-JUN-19 12:00	0.25	171	hours	EHTR-FM
	3	12-JUN-19 12:02	19-JUN-19 12:00	0.25	168	hours	EHTR-FM
	4	12-JUN-19 09:03	19-JUN-19 12:00	0.25	171	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2291323 were received on 13-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **EVO\_MW\_Q2-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave.			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kimberley.Hackett@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	cameron.griffin@teck.com	X	X	X
Phone Number	250-425-8048			Phone Number	403-407-1800			PO number				

**SAMPLE DETAILS**      **ANALYSIS REQUESTED**      Filtered: F: Field, L: Lab, F: Field & Lab, N: None



L2291323-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N	
<del>EV_MW_AQ1_WG_Q2-2019_NP</del>	<del>EV_MW_AQ1</del>	<del>WG</del>				<del>G</del>	<del>5</del>											
<del>EV_MW_AQ2_WG_Q2-2019_NP</del>	<del>EV_MW_AQ2</del>	<del>WG</del>				<del>G</del>	<del>5</del>											
EV_MW_MC3_WG_Q2-2019_NP ✓	EV_MW_MC3	WG		June 12	11:45	G	5	1	1	1			1		1			
<del>EV_MW_MC4_WG_Q2-2019_NP</del>	<del>EV_MW_MC4</del>	<del>WG</del>				<del>G</del>	<del>5</del>											
<del>EV_MW_QC1_WG_Q2-2019_NP</del>	<del>EV_MW_QC1</del>	<del>WG</del>				<del>G</del>	<del>5</del>											
EV_MW_SC1-A_WG_Q2-2019_NP ✓	EV_MW_SC1-A	WG		June 12	9:03	G	5	1	1	1			1		1			
EV_MW_SC1-B_WG_Q2-2019_NP ✓	EV_MW_SC1-B	WG		June 12	12:02	G	5	1	1	1			1		1			
EV_MW_SC1-C_WG_Q2-2019_NP ✓	EV_MW_SC1-C	WG		June 12	9:03	G	5	1	1	1			1		1			
<del>EV_MW_SC1-D_WG_Q2-2019_NP</del>	<del>EV_MW_SC1-D</del>	<del>WG</del>				<del>G</del>	<del>5</del>											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	6/13 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>Jennifer de Werk</i>	250-910-7287 <del>250-425-1159</del>
	<i>Jennifer de Werk</i>	Date/Time: June 12, 2019

4°C



Teck Coal Ltd. (Elkview)  
ATTN: Allie Ferguson  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 14-JUN-19  
Report Date: 21-JUN-19 15:41 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2291870  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: EVO\_MW\_Q2-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2291870-1	L2291870-2	L2291870-3	L2291870-4
		Description	WG	WG	WG	WG
		Sampled Date	13-JUN-19	13-JUN-19	13-JUN-19	13-JUN-19
		Sampled Time	08:38	12:19	11:02	08:38
		Client ID	EV_MW_AQ1_WG_Q2-2019_NP	EV_MW_AQ2_WG_Q2-2019_NP	EV_MW_MC4_WG_Q2-2019_NP	EV_MW_BC10-A_WG_Q2-2019_NP_0613
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	829	1070	840	842	
	Hardness (as CaCO3) (mg/L)	494	637	501	505	
	pH (pH)	8.14	8.07	8.10	8.15	
	ORP (mV)	430	407	433	422	
	Total Suspended Solids (mg/L)	1.0	4.3	105	2.0	
	Total Dissolved Solids (mg/L)	531 <sup>DLHC</sup>	747 <sup>DLHC</sup>	567 <sup>DLHC</sup>	520 <sup>DLHC</sup>	
	Turbidity (NTU)	1.09	7.90	32.6	1.09	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	11.3	18.4	11.2	13.9	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	335	439	299	347	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	335	439	299	347	
	Ammonia as N (mg/L)	0.0068	0.0482	0.0121	0.0069	
	Bromide (Br) (mg/L)	0.155	<0.25 <sup>DLHC</sup>	0.190	0.154	
	Chloride (Cl) (mg/L)	32.9	14.8 <sup>DLHC</sup>	33.4	33.0	
	Fluoride (F) (mg/L)	0.228	0.21 <sup>DLHC</sup>	0.216	0.222	
	Ion Balance (%)	108	108	112	108	
	Nitrate (as N) (mg/L)	0.236	0.053 <sup>DLHC</sup>	0.0091	0.230	
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.102	0.070	0.077	<0.050	
	Total Nitrogen (mg/L)	0.338	0.123	0.086	0.230	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0156	<0.0010	<0.0010	0.0140	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0141	<0.0020	<0.0020	0.0119 <sup>DLM</sup>	
	Phosphorus (P)-Total (mg/L)	0.0145	0.0027 <sup>DLHC</sup>	0.161 <sup>DLHC</sup>	0.019 <sup>DLM</sup>	
	Sulfate (SO4) (mg/L)	82.3	168 <sup>DLHC</sup>	117	82.4	
	Anion Sum (meq/L)	9.36	12.7	9.36	9.61	
	Cation Sum (meq/L)	10.1	13.7	10.5	10.4	
Cation - Anion Balance (%)	4.0	3.9	5.7	3.9		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.51	<0.50	1.19	<0.50	
	Total Organic Carbon (mg/L)	0.55	0.57	1.86	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00015	0.00125	0.00015	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2291870-1 WG 13-JUN-19 08:38 EV_MW_AQ1_WG _Q2-2019_NP	L2291870-2 WG 13-JUN-19 12:19 EV_MW_AQ2_WG _Q2-2019_NP	L2291870-3 WG 13-JUN-19 11:02 EV_MW_MC4_WG _Q2-2019_NP	L2291870-4 WG 13-JUN-19 08:38 EV_MW_BC10- A_WG_Q2- 2019_NP_0613	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.188	0.0188	0.112	0.187
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.024	0.103	0.041	0.025
	Cadmium (Cd)-Dissolved (ug/L)	0.0404	0.0113	0.0058	0.0478
	Calcium (Ca)-Dissolved (mg/L)	117	154	134	120
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00010	0.00111	0.00014
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	0.45	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.597	0.325	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	0.000051
	Lithium (Li)-Dissolved (mg/L)	0.0212	0.0576	0.0224	0.0217
	Magnesium (Mg)-Dissolved (mg/L)	49.1	61.6	40.1	50.0
	Manganese (Mn)-Dissolved (mg/L)	0.00079	0.0571	0.0719	0.00071
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000349	0.000226	0.00259	0.000350
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00075	0.00312	<0.00050
	Potassium (K)-Dissolved (mg/L)	1.61	2.04	2.34	1.62
	Selenium (Se)-Dissolved (ug/L)	3.49	<0.050	<0.050	3.52
	Silicon (Si)-Dissolved (mg/L)	3.99	6.75	5.23	4.06
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	5.36	20.9	9.24	5.47
	Strontium (Sr)-Dissolved (mg/L)	0.360	1.20	0.659	0.365
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000011	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000461	0.000102	0.00158	0.000450
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0050	0.0197	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2291870-1, -2, -3, -4
Matrix Spike	Ammonia as N	MS-B	L2291870-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
<p>True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time</p>			

## Reference Information

of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

EVO\_MW\_Q2-2019

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4681192</b>							
<b>WG3084090-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.1		%		85-115	20-JUN-19
<b>WG3084090-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			97.6		%		85-115	20-JUN-19
<b>WG3084090-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	20-JUN-19
<b>WG3084090-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	20-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4681182</b>							
<b>WG3084106-15</b>	<b>DUP</b>	<b>L2291870-2</b>						
Alkalinity, Total (as CaCO3)		439	424		mg/L	3.4	20	20-JUN-19
<b>WG3084106-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	20-JUN-19
<b>WG3084106-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672960</b>							
<b>WG3079597-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.8		%		80-120	18-JUN-19
<b>WG3079597-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670830</b>							
<b>WG3078400-10</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	14-JUN-19
<b>WG3078400-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677326</b>							
<b>WG3083019-3</b>	<b>DUP</b>	<b>L2291870-3</b>						
Dissolved Organic Carbon		1.19	1.25		mg/L	4.7	20	19-JUN-19
<b>WG3083019-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			87.8		%		80-120	19-JUN-19
<b>WG3083019-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
<b>WG3083019-4</b>	<b>MS</b>	<b>L2291870-4</b>						



## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4677326							
WG3083019-4	MS	L2291870-4						
Dissolved Organic Carbon			88.2		%		70-130	19-JUN-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4677326							
WG3083019-3	DUP	L2291870-3						
Total Organic Carbon			1.19	J	mg/L	0.67	1	19-JUN-19
WG3083019-2	LCS							
Total Organic Carbon			91.8		%		80-120	19-JUN-19
WG3083019-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-JUN-19
WG3083019-4	MS	L2291870-4						
Total Organic Carbon			90.9		%		70-130	19-JUN-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4670830							
WG3078400-10	LCS							
Chloride (Cl)			99.6		%		90-110	14-JUN-19
WG3078400-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-JUN-19
<b>COLOUR-TRUE-CL</b> <b>Water</b>								
Batch	R4671902							
WG3079472-3	DUP	L2291870-4						
Colour, True			<5.0	RPD-NA	CU	N/A	20	17-JUN-19
WG3079472-2	LCS							
Colour, True			97.2		%		85-115	17-JUN-19
WG3079472-1	MB							
Colour, True			<5.0		CU		5	17-JUN-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4681182							
WG3084106-15	DUP	L2291870-2						
Conductivity (@ 25C)			1050		uS/cm	1.6	10	20-JUN-19
WG3084106-14	LCS							
Conductivity (@ 25C)			102.1		%		90-110	20-JUN-19
WG3084106-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	20-JUN-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670830</b>							
<b>WG3078400-10</b>	<b>LCS</b>							
Fluoride (F)			103.0		%		90-110	14-JUN-19
<b>WG3078400-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	14-JUN-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4677175</b>							
<b>WG3081835-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			93.4		%		80-120	20-JUN-19
<b>WG3081835-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			93.3		%		80-120	20-JUN-19
<b>WG3081835-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-19
<b>WG3081835-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	20-JUN-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672960</b>							
<b>WG3079597-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.0		%		80-120	18-JUN-19
Antimony (Sb)-Dissolved			93.8		%		80-120	18-JUN-19
Arsenic (As)-Dissolved			96.7		%		80-120	18-JUN-19
Barium (Ba)-Dissolved			98.5		%		80-120	18-JUN-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	18-JUN-19
Boron (B)-Dissolved			100.6		%		80-120	18-JUN-19
Cadmium (Cd)-Dissolved			98.0		%		80-120	18-JUN-19
Calcium (Ca)-Dissolved			101.8		%		80-120	18-JUN-19
Chromium (Cr)-Dissolved			97.7		%		80-120	18-JUN-19
Cobalt (Co)-Dissolved			98.1		%		80-120	18-JUN-19
Copper (Cu)-Dissolved			97.1		%		80-120	18-JUN-19
Iron (Fe)-Dissolved			94.9		%		80-120	18-JUN-19
Lead (Pb)-Dissolved			95.7		%		80-120	18-JUN-19
Lithium (Li)-Dissolved			97.7		%		80-120	18-JUN-19
Magnesium (Mg)-Dissolved			99.9		%		80-120	18-JUN-19
Manganese (Mn)-Dissolved			104.1		%		80-120	18-JUN-19
Molybdenum (Mo)-Dissolved			96.3		%		80-120	18-JUN-19
Nickel (Ni)-Dissolved			96.7		%		80-120	18-JUN-19
Potassium (K)-Dissolved			95.1		%		80-120	18-JUN-19



## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672960</b>							
<b>WG3079597-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			97.2		%		80-120	18-JUN-19
Silicon (Si)-Dissolved			100.7		%		60-140	18-JUN-19
Silver (Ag)-Dissolved			94.5		%		80-120	18-JUN-19
Sodium (Na)-Dissolved			103.8		%		80-120	18-JUN-19
Strontium (Sr)-Dissolved			98.5		%		80-120	18-JUN-19
Thallium (Tl)-Dissolved			97.1		%		80-120	18-JUN-19
Tin (Sn)-Dissolved			95.4		%		80-120	18-JUN-19
Titanium (Ti)-Dissolved			96.3		%		80-120	18-JUN-19
Uranium (U)-Dissolved			98.5		%		80-120	18-JUN-19
Vanadium (V)-Dissolved			99.9		%		80-120	18-JUN-19
Zinc (Zn)-Dissolved			98.3		%		80-120	18-JUN-19
<b>WG3079597-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19



## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4672960</b>							
<b>WG3079597-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4678290</b>							
<b>WG3082919-6</b>	<b>LCS</b>							
Ammonia as N			108.9		%		85-115	19-JUN-19
<b>WG3082919-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670830</b>							
<b>WG3078400-10</b>	<b>LCS</b>							
Nitrite (as N)			102.5		%		90-110	14-JUN-19
<b>WG3078400-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	14-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4670830</b>							
<b>WG3078400-10</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	14-JUN-19
<b>WG3078400-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	14-JUN-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4673389</b>							
<b>WG3081363-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	18-JUN-19
<b>WG3081363-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			225		mV		210-230	18-JUN-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681189</b>							
<b>WG3084469-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.6		%		75-125	21-JUN-19
<b>WG3084469-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.0		%		75-125	21-JUN-19
<b>WG3084469-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.8		%		75-125	21-JUN-19
<b>WG3084469-5</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	21-JUN-19
<b>WG3084469-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.9		%		75-125	21-JUN-19
<b>WG3084469-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-11</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>WG3084469-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4681213</b>							
<b>WG3082774-4</b>	<b>LCS</b>							
Total Suspended Solids			89.7		%		85-115	20-JUN-19
<b>WG3082774-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4671379</b>							
<b>WG3078615-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	15-JUN-19
<b>WG3078615-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-JUN-19

# Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2291870

Report Date: 21-JUN-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Colour (True) by Spectrometer							
	1	13-JUN-19 08:38	17-JUN-19 14:00	3	4	days	EHT
	2	13-JUN-19 12:19	17-JUN-19 14:00	3	4	days	EHT
	3	13-JUN-19 11:02	17-JUN-19 14:00	3	4	days	EHT
	4	13-JUN-19 08:38	17-JUN-19 14:00	3	4	days	EHT
Oxidation redution potential by elect.							
	1	13-JUN-19 08:38	18-JUN-19 12:30	0.25	124	hours	EHTR-FM
	2	13-JUN-19 12:19	18-JUN-19 12:30	0.25	120	hours	EHTR-FM
	3	13-JUN-19 11:02	18-JUN-19 13:15	0.25	122	hours	EHTR-FM
	4	13-JUN-19 08:38	18-JUN-19 13:15	0.25	125	hours	EHTR-FM
pH							
	1	13-JUN-19 08:38	20-JUN-19 21:00	0.25	180	hours	EHTR-FM
	2	13-JUN-19 12:19	20-JUN-19 21:00	0.25	177	hours	EHTR-FM
	3	13-JUN-19 11:02	20-JUN-19 21:00	0.25	178	hours	EHTR-FM
	4	13-JUN-19 08:38	20-JUN-19 21:00	0.25	180	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2291870 were received on 14-JUN-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

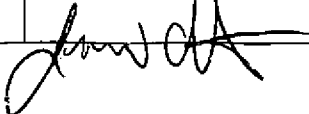
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **EVO\_MW\_Q2-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER USES				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave.			Address	2559 29 Street NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kimberley.hackett@teck.com	X	X	X
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	cameron.griffin@teck.com	X	X	X
Phone Number	250-425-8048			Phone Number	403-407-1800			Email 6:	Teck.Lab.Results@sharepoint.teck.com			
								PO number	VPO 00604897			

SAMPLE DETAILS								ANALYSIS REQUESTED				
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA
EV_MW_AQ1_WG_Q2-2019_NP	EV_MW_AQ1	WG		June 13, 19	8:30	G	5	1	1	1	1	1
EV_MW_AQ2_WG_Q2-2019_NP	EV_MW_AQ2	WG		June 13, 19	12:19	G	5	1	1	1	1	1
EV_MW_MC4_WG_Q2-2019_NP	EV_MW_MC4	WG		June 13, 19	11:02	G	5	1	1	1	1	1
EV_MW_BC10-A_WG_Q2-2019_NP_0013	EV_MW_BC10-A	WG		June 13, 19	6:38	G	5	1	1	1	1	1
 L2291870-COFC												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
MC4 - Hg Bottle had HCl preservative <sup>leaked</sup> on Bottle before sampling. Replaced preservative for sample. Handle w/ care. Wear gloves when handling bottle.			DK	6/14 0900

SERVICE REQUEST (rush = subject to availability)	Sampler's Name	Mobile #
<input type="checkbox"/> Regular (default) X <input type="checkbox"/> Priority (2-3 business days) - 50% surcharge <input type="checkbox"/> Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jennifer de Werk	250-910-7287
		Date/Time: June 13, 2019 13:23

2°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 10-JUL-19  
Report Date: 25-JUL-19 09:19 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2307726  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190709Q3GW  
Legal Site Desc:

Comments: RRR qualifier: Prep error, samples analyzed from RAW cuts.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2307726-1	L2307726-2	L2307726-3
		Description	WG	WG	WG
		Sampled Date	09-JUL-19	09-JUL-19	09-JUL-19
		Sampled Time	12:35	10:50	10:20
		Client ID	EV_BCGW_WG_2 019_Q3_NP	EV_MCGWS_WG_ 2019_Q3_NP	EV_MCGWD_WG_ 2019_Q3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)	864	801	568	
	Hardness (as CaCO3) (mg/L)	466	360	223	
	pH (pH)	8.36	8.14	8.49	
	ORP (mV)	399	320	256	
	Total Suspended Solids (mg/L)	<1.0	9.1	19.4	
	Total Dissolved Solids (mg/L)	610 <sup>DLHC</sup>	496 <sup>DLHC</sup>	312 <sup>DLHC</sup>	
	Turbidity (NTU)	0.33	32.3	20.0	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.6	5.5	<1.0	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	207	266	243	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	4.0	<1.0	9.4	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	211	266	252	
	Ammonia as N (mg/L)	0.0058	0.139	0.238	
	Bromide (Br) (mg/L)	0.622	0.167	<0.050	
	Chloride (Cl) (mg/L)	7.23	37.2	1.48	
	Fluoride (F) (mg/L)	0.163	0.419	1.12	
	Ion Balance (%)	93.1	96.2	92.1	
	Nitrate (as N) (mg/L)	4.07	<0.0050	0.0083	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.0038	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.202	0.350	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0037	<0.0010	0.0028	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0038	<0.0020	0.048 <sup>DLM</sup>	
	Phosphorus (P)-Total (mg/L)	<0.010 <sup>DLM</sup>	0.0037	0.077 <sup>DLM</sup>	
	Sulfate (SO4) (mg/L)	266	132	74.6	
	Anion Sum (meq/L)	10.3	9.14	6.70	
	Cation Sum (meq/L)	9.56	8.79	6.17	
	Cation - Anion Balance (%)	-3.6	-1.9	-4.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.75	0.72	
	Total Organic Carbon (mg/L)	<0.50	0.75	0.62	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	LAB	LAB	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00013	0.00148	0.00134	
	Barium (Ba)-Dissolved (mg/L)	0.0442	0.0246	0.0552	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2307726-1	L2307726-2	L2307726-3
		Description	WG	WG	WG
		Sampled Date	09-JUL-19	09-JUL-19	09-JUL-19
		Sampled Time	12:35	10:50	10:20
		Client ID	EV_BCGW_WG_2 019_Q3_NP	EV_MCGWS_WG_ 2019_Q3_NP	EV_MCGWD_WG_ 2019_Q3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.015	0.025	0.073
	Cadmium (Cd)-Dissolved (ug/L)		0.0382	<0.0050	<0.010 <sup>DLM</sup>
	Calcium (Ca)-Dissolved (mg/L)		111	93.2	49.1
	Chromium (Cr)-Dissolved (mg/L)		0.00012	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	0.57
	Copper (Cu)-Dissolved (mg/L)		0.00054	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		<0.010	2.05	0.755
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0287	0.0225	0.0081
	Magnesium (Mg)-Dissolved (mg/L)		45.9	30.8	24.2
	Manganese (Mn)-Dissolved (mg/L)		<0.00010	0.125	0.466
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050		
	Mercury (Hg)-Dissolved (ug/L)			<0.00050 <sup>RRR</sup>	<0.00050 <sup>RRR</sup>
	Molybdenum (Mo)-Dissolved (mg/L)		0.000904	0.00392	0.0185
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	0.00054	0.00261
	Potassium (K)-Dissolved (mg/L)		1.29	1.64	1.37
	Selenium (Se)-Dissolved (ug/L)		30.2	0.056	<0.050
	Silicon (Si)-Dissolved (mg/L)		2.94	5.18	5.35
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		4.98	33.1	37.1
	Strontium (Sr)-Dissolved (mg/L)		0.216	0.309	0.505
	Thallium (Tl)-Dissolved (mg/L)		0.000013	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00171	0.00205	0.00305
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0019	<0.0010	0.0021

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2307726-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2307726-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2307726-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2307726-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2307726-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRR	Refer to Report Remarks for issues regarding this analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-CFA-ED** Water TKN in Water by Colour APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190709Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 1 of 11

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4711008</b>							
<b>WG3105116-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.9		%		85-115	14-JUL-19
<b>WG3105116-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	14-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4710951</b>							
<b>WG3105141-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			107.0		%		85-115	14-JUL-19
<b>WG3105141-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709588</b>							
<b>WG3104056-3</b>	<b>DUP</b>	<b>L2307726-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	13-JUL-19
<b>WG3104056-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	13-JUL-19
<b>WG3104056-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-JUL-19
<b>WG3104056-4</b>	<b>MS</b>	<b>L2307726-1</b>						
Beryllium (Be)-Dissolved			95.8		%		70-130	13-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709002</b>							
<b>WG3103722-2</b>	<b>LCS</b>							
Bromide (Br)			104.0		%		85-115	11-JUL-19
<b>WG3103722-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	11-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4711501</b>							
<b>WG3105335-3</b>	<b>DUP</b>	<b>L2307726-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-JUL-19
<b>WG3105335-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.0		%		80-120	14-JUL-19
<b>WG3105335-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-JUL-19
<b>WG3105335-4</b>	<b>MS</b>	<b>L2307726-3</b>						
Dissolved Organic Carbon			90.0		%		70-130	14-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch	R4711501							
<b>WG3105335-3</b>	<b>DUP</b>	<b>L2307726-1</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-JUL-19
<b>WG3105335-2</b>	<b>LCS</b>							
Total Organic Carbon			104.0		%		80-120	14-JUL-19
<b>WG3105335-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-JUL-19
<b>WG3105335-4</b>	<b>MS</b>	<b>L2307726-3</b>						
Total Organic Carbon			92.4		%		70-130	14-JUL-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch	R4709002							
<b>WG3103722-2</b>	<b>LCS</b>							
Chloride (Cl)			102.4		%		90-110	11-JUL-19
<b>WG3103722-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	11-JUL-19
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
Batch	R4707984							
<b>WG3102252-6</b>	<b>DUP</b>	<b>L2307726-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	11-JUL-19
<b>WG3102252-5</b>	<b>LCS</b>							
Colour, True			101.3		%		85-115	11-JUL-19
<b>WG3102252-4</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	11-JUL-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4710951							
<b>WG3105141-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.0		%		90-110	14-JUL-19
<b>WG3105141-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-JUL-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4709002							
<b>WG3103722-2</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	11-JUL-19
<b>WG3103722-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	11-JUL-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4712364</b>							
<b>WG3105553-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.4		%		80-120	16-JUL-19
<b>WG3105873-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.0		%		80-120	16-JUL-19
<b>WG3105553-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	16-JUL-19
<b>WG3105873-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	16-JUL-19
<b>HG-D-U-CVAF-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4721368</b>							
<b>WG3113175-3</b>	<b>DUP</b>	<b>L2307726-2</b>						
Mercury (Hg)-Dissolved		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	23-JUL-19
<b>WG3113175-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			90.0		%		80-120	23-JUL-19
<b>WG3113175-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	23-JUL-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4709588</b>							
<b>WG3104056-3</b>	<b>DUP</b>	<b>L2307726-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	13-JUL-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-19
Arsenic (As)-Dissolved		0.00148	0.00152		mg/L	2.7	20	13-JUL-19
Barium (Ba)-Dissolved		0.0246	0.0245		mg/L	0.4	20	13-JUL-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-19
Boron (B)-Dissolved		0.025	0.024		mg/L	2.1	20	13-JUL-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	13-JUL-19
Calcium (Ca)-Dissolved		93.2	93.0		mg/L	0.2	20	13-JUL-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-19
Iron (Fe)-Dissolved		2.05	2.00		mg/L	2.2	20	13-JUL-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-19
Lithium (Li)-Dissolved		0.0225	0.0221		mg/L	1.9	20	13-JUL-19
Magnesium (Mg)-Dissolved		30.8	30.8		mg/L	0.2	20	13-JUL-19
Manganese (Mn)-Dissolved		0.125	0.127		mg/L	1.2	20	13-JUL-19
Molybdenum (Mo)-Dissolved		0.00392	0.00388		mg/L	1.0	20	13-JUL-19



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709588</b>							
<b>WG3104056-3</b>	<b>DUP</b>	<b>L2307726-2</b>						
Nickel (Ni)-Dissolved		0.00054	0.00054		mg/L	1.7	20	13-JUL-19
Potassium (K)-Dissolved		1.64	1.64		mg/L	0.3	20	13-JUL-19
Selenium (Se)-Dissolved		0.000056	0.000106	J	mg/L	0.000050	0.0001	13-JUL-19
Silicon (Si)-Dissolved		5.18	5.17		mg/L	0.2	20	13-JUL-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-JUL-19
Sodium (Na)-Dissolved		33.1	34.0		mg/L	2.6	20	13-JUL-19
Strontium (Sr)-Dissolved		0.309	0.306		mg/L	1.0	20	13-JUL-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-JUL-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	13-JUL-19
Uranium (U)-Dissolved		0.00205	0.00205		mg/L	0.1	20	13-JUL-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	13-JUL-19
<b>WG3104056-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.4		%		80-120	13-JUL-19
Antimony (Sb)-Dissolved			95.0		%		80-120	13-JUL-19
Arsenic (As)-Dissolved			99.0		%		80-120	13-JUL-19
Barium (Ba)-Dissolved			99.3		%		80-120	13-JUL-19
Bismuth (Bi)-Dissolved			97.3		%		80-120	13-JUL-19
Boron (B)-Dissolved			98.1		%		80-120	13-JUL-19
Cadmium (Cd)-Dissolved			99.3		%		80-120	13-JUL-19
Calcium (Ca)-Dissolved			99.5		%		80-120	13-JUL-19
Chromium (Cr)-Dissolved			97.7		%		80-120	13-JUL-19
Cobalt (Co)-Dissolved			98.6		%		80-120	13-JUL-19
Copper (Cu)-Dissolved			97.3		%		80-120	13-JUL-19
Iron (Fe)-Dissolved			96.9		%		80-120	13-JUL-19
Lead (Pb)-Dissolved			97.7		%		80-120	13-JUL-19
Lithium (Li)-Dissolved			98.9		%		80-120	13-JUL-19
Magnesium (Mg)-Dissolved			97.0		%		80-120	13-JUL-19
Manganese (Mn)-Dissolved			99.96		%		80-120	13-JUL-19
Molybdenum (Mo)-Dissolved			99.4		%		80-120	13-JUL-19
Nickel (Ni)-Dissolved			98.7		%		80-120	13-JUL-19
Potassium (K)-Dissolved			102.2		%		80-120	13-JUL-19
Selenium (Se)-Dissolved			102.0		%		80-120	13-JUL-19



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709588</b>							
<b>WG3104056-2</b>	<b>LCS</b>							
Silicon (Si)-Dissolved			107.8		%		60-140	13-JUL-19
Silver (Ag)-Dissolved			99.2		%		80-120	13-JUL-19
Sodium (Na)-Dissolved			103.4		%		80-120	13-JUL-19
Strontium (Sr)-Dissolved			99.3		%		80-120	13-JUL-19
Thallium (Tl)-Dissolved			94.5		%		80-120	13-JUL-19
Tin (Sn)-Dissolved			95.6		%		80-120	13-JUL-19
Titanium (Ti)-Dissolved			95.5		%		80-120	13-JUL-19
Uranium (U)-Dissolved			99.96		%		80-120	13-JUL-19
Vanadium (V)-Dissolved			100.1		%		80-120	13-JUL-19
Zinc (Zn)-Dissolved			96.5		%		80-120	13-JUL-19
<b>WG3104056-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUL-19



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709588</b>							
<b>WG3104056-1</b>	<b>MB</b>	<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUL-19
<b>WG3104056-4</b>	<b>MS</b>	<b>L2307726-1</b>						
Aluminum (Al)-Dissolved			100.1		%		70-130	13-JUL-19
Antimony (Sb)-Dissolved			101.6		%		70-130	13-JUL-19
Arsenic (As)-Dissolved			105.4		%		70-130	13-JUL-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	13-JUL-19
Bismuth (Bi)-Dissolved			90.8		%		70-130	13-JUL-19
Boron (B)-Dissolved			97.3		%		70-130	13-JUL-19
Cadmium (Cd)-Dissolved			103.9		%		70-130	13-JUL-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	13-JUL-19
Chromium (Cr)-Dissolved			99.9		%		70-130	13-JUL-19
Cobalt (Co)-Dissolved			95.5		%		70-130	13-JUL-19
Copper (Cu)-Dissolved			94.8		%		70-130	13-JUL-19
Iron (Fe)-Dissolved			96.6		%		70-130	13-JUL-19
Lead (Pb)-Dissolved			97.5		%		70-130	13-JUL-19
Lithium (Li)-Dissolved			96.8		%		70-130	13-JUL-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	13-JUL-19
Manganese (Mn)-Dissolved			98.9		%		70-130	13-JUL-19
Molybdenum (Mo)-Dissolved			103.5		%		70-130	13-JUL-19
Nickel (Ni)-Dissolved			95.1		%		70-130	13-JUL-19
Potassium (K)-Dissolved			99.0		%		70-130	13-JUL-19
Selenium (Se)-Dissolved			105.0		%		70-130	13-JUL-19
Silicon (Si)-Dissolved			98.4		%		70-130	13-JUL-19
Silver (Ag)-Dissolved			103.6		%		70-130	13-JUL-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	13-JUL-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	13-JUL-19
Thallium (Tl)-Dissolved			93.3		%		70-130	13-JUL-19
Tin (Sn)-Dissolved			101.5		%		70-130	13-JUL-19



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
Batch	R4709588							
<b>WG3104056-4 MS</b>		<b>L2307726-1</b>						
Titanium (Ti)-Dissolved			97.6		%		70-130	13-JUL-19
Uranium (U)-Dissolved			100.0		%		70-130	13-JUL-19
Vanadium (V)-Dissolved			101.9		%		70-130	13-JUL-19
Zinc (Zn)-Dissolved			95.2		%		70-130	13-JUL-19
<b>NH3-L-F-CL</b>								
Batch	R4709609							
<b>WG3104081-18 LCS</b>								
Ammonia as N			111.7		%		85-115	12-JUL-19
<b>WG3104081-17 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	12-JUL-19
<b>NO2-L-IC-N-CL</b>								
Batch	R4709002							
<b>WG3103722-2 LCS</b>								
Nitrite (as N)			103.6		%		90-110	11-JUL-19
<b>WG3103722-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	11-JUL-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4709002							
<b>WG3103722-2 LCS</b>								
Nitrate (as N)			102.9		%		90-110	11-JUL-19
<b>WG3103722-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	11-JUL-19
<b>ORP-CL</b>								
Batch	R4713332							
<b>WG3107264-5 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	16-JUL-19
<b>P-T-L-COL-CL</b>								
Batch	R4713918							
<b>WG3107929-18 LCS</b>								
Phosphorus (P)-Total			116.0		%		80-120	17-JUL-19
<b>WG3107929-17 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-JUL-19
<b>P-TD-L-COL-CL</b>								
Matrix	Water							



## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4713918							
<b>WG3107929-18 LCS</b>								
Phosphorus (P)-Total Dissolved			116.0		%		80-120	17-JUL-19
<b>WG3107929-17 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	17-JUL-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4710951							
<b>WG3105141-17 LCS</b>								
pH			7.07		pH		6.9-7.1	14-JUL-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4708658							
<b>WG3102815-14 LCS</b>								
Orthophosphate-Dissolved (as P)			107.0		%		80-120	11-JUL-19
<b>WG3102815-13 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	11-JUL-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4709002							
<b>WG3103722-2 LCS</b>								
Sulfate (SO4)			103.0		%		90-110	11-JUL-19
<b>WG3103722-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	11-JUL-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4712896							
<b>WG3105044-14 LCS</b>								
Total Dissolved Solids			96.0		%		85-115	15-JUL-19
<b>WG3105044-13 MB</b>								
Total Dissolved Solids			<10		mg/L		10	15-JUL-19
<b>TKN-L-CFA-ED</b>	<b>Water</b>							
Batch	R4719163							
<b>WG3110293-6 LCS</b>								
Total Kjeldahl Nitrogen			96		%		75-125	20-JUL-19
<b>WG3110293-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUL-19
<b>TSS-L-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4712982							
<b>WG3105591-10 LCS</b>								
Total Suspended Solids			96.7		%		85-115	16-JUL-19
<b>WG3105591-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	16-JUL-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4708627							
<b>WG3102647-16 LCS</b>								
Turbidity			95.0		%		85-115	11-JUL-19
<b>WG3102647-17 MB</b>								
Turbidity			<0.10		NTU		0.1	11-JUL-19

# Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2307726

Report Date: 25-JUL-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	09-JUL-19 12:35	16-JUL-19 12:20	0.25	168	hours	EHTR-FM
	2	09-JUL-19 10:50	16-JUL-19 12:20	0.25	169	hours	EHTR-FM
	3	09-JUL-19 10:20	16-JUL-19 12:20	0.25	170	hours	EHTR-FM
pH	1	09-JUL-19 12:35	14-JUL-19 12:00	0.25	120	hours	EHTR-FM
	2	09-JUL-19 10:50	14-JUL-19 12:00	0.25	121	hours	EHTR-FM
	3	09-JUL-19 10:20	14-JUL-19 12:00	0.25	122	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2307726 were received on 10-JUL-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

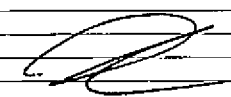
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: 20190709Q3GW		TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Elview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	Bryan.Dgden@teck.com	X	X	X
Project Manager	Cameron Griffin		Email	Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.com	X	X	X
Email	Cameron.Griffin@teck.com		Address	2559 29 St NE		Email 3:	Kimberley.hackett@teck.com	X	X	X
Address	RR#1 HWY# 3					Email 4:	Cameron.Griffin@teck.com	X	X	X
						Email 5:	tecklab@yysb@charpoint.teck.com	X	X	X
City	Sprucewood	Province	BC	City	Calgary	Province	AB	PO #	VPO0610852	
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	1 403 291 9897						

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C=Comp	# Of Cont	ANALYSIS	ANALYSIS REQUESTED											
									Filtered	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes
									TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (ALPHA 5310)	Dissolved Phosphorus	TKN/TOC (ALPHA 4500-NORG)	Total Nitrogen for BC (NO3 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	
EV_BCgw_WG_2019_Q3_NP	EV_BCgw	WG	N	7/9/2019	12:35	G	5		1		1	1		1					1	
EV_MCgwS_WG_2019_Q3_NP	EV_MCgwS	WG	N	7/9/2019	10:50	G	5		1		1	1		1		1				
EV_MCgwD_WG_2019_Q3_NP	EV_MCgwD	WG	N	7/9/2019	10:20	G	5		1		1	1		1						
EV_MCgwD_WG_2019_Q3_FB-HG	EV_MCgwD	WG	N	7/9/2019	10:20	G	1										1			
Total							16													

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b> Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	<b>RELINQUISHED BY/AFFILIATION</b>  	<b>DATE/TIME</b>  	<b>ACCEPTED BY/AFFILIATION</b> 	<b>DATE/TIME</b> 7/10 9:40
--	--	--------------------------	---	-------------------------------

<b>NO OF BOTTLES RETURNED/DESCRIPTION</b> Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency < 1 Day, ASAP or Weekend - Contact ALS	<b>Sampler's Name</b> Kimberley Hackett	<b>Mobile #</b>  	<b>Sampler's Signature</b>  	<b>Date/Time</b> July 9, 2019
---	--	-------------------------	------------------------------------	----------------------------------



L2307726-COFC

92



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 11-JUL-19  
Report Date: 23-JUL-19 14:19 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2308370  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190710Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2308370-1	L2308370-2	L2308370-3
		Description	WG	WG	WG
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	12:40	15:15	09:55
		Client ID	EV_BALGW_WG_2019_Q3_NP	EV_LSGW_WG_2019_Q3_NP	EV_GV3GW_WG_2019_Q3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)	719	1030	634	
	Hardness (as CaCO3) (mg/L)	359	597	343	
	pH (pH)	8.16	8.01	8.13	
	ORP (mV)	327	302	329	
	Total Suspended Solids (mg/L)	13.5	7.0	<1.0	
	Total Dissolved Solids (mg/L)	443 <sup>DLHC</sup>	545 <sup>DLHC</sup>	384 <sup>DLHC</sup>	
	Turbidity (NTU)	4.28	34.2	0.12	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.8	9.6	1.4	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	301	573	212	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	301	573	212	
	Ammonia as N (mg/L)	0.141	0.152	<0.0050	
	Bromide (Br) (mg/L)	<0.050	<0.25 <sup>DLHC</sup>	<0.050	
	Chloride (Cl) (mg/L)	1.77	9.4 <sup>DLHC</sup>	1.62	
	Fluoride (F) (mg/L)	0.243	0.30 <sup>DLHC</sup>	0.512	
	Ion Balance (%)	107	95.9	95.9	
	Nitrate (as N) (mg/L)	0.0186	<0.025 <sup>DLHC</sup>	0.134	
	Nitrite (as N) (mg/L)	0.0015	<0.0050 <sup>DLHC</sup>	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.417	0.252	<0.050	
	Total Nitrogen (mg/L)	0.437	0.252	0.134	
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	<0.0010	0.0016	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0130	0.0112	<0.0020	
	Phosphorus (P)-Total (mg/L)	0.0258	0.0280 <sup>DLHC</sup>	<0.0020	
	Sulfate (SO4) (mg/L)	97.6	69.5 <sup>DLHC</sup>	144	
	Anion Sum (meq/L)	8.11	13.2	7.33	
	Cation Sum (meq/L)	8.71	12.6	7.03	
Cation - Anion Balance (%)	3.6	-2.1	-2.1		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	2.07	<0.50	
	Total Organic Carbon (mg/L)	<0.50	2.20	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0034	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00019	0.00190	<0.00010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2308370-1	L2308370-2	L2308370-3
		Description	WG	WG	WG
		Sampled Date	10-JUL-19	10-JUL-19	10-JUL-19
		Sampled Time	12:40	15:15	09:55
		Client ID	EV_BALGW_WG_2019_Q3_NP	EV_LSGW_WG_2019_Q3_NP	EV_GV3GW_WG_2019_Q3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0341	0.202	0.0178
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.179	0.052	0.014
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	<0.0050	0.0085
	Calcium (Ca)-Dissolved (mg/L)		93.4	115	85.3
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00025
	Cobalt (Co)-Dissolved (ug/L)		0.17	1.21	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	0.00056
	Iron (Fe)-Dissolved (mg/L)		0.098	2.80	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.127	0.0713	0.0164
	Magnesium (Mg)-Dissolved (mg/L)		30.5	75.4	31.7
	Manganese (Mn)-Dissolved (mg/L)		0.0299	1.11	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000332	0.00257	0.000936
	Nickel (Ni)-Dissolved (mg/L)		0.00056	0.00433	<0.00050
	Potassium (K)-Dissolved (mg/L)		2.69	3.89	0.993
	Selenium (Se)-Dissolved (ug/L)		0.102	0.075	4.01
	Silicon (Si)-Dissolved (mg/L)		4.71	4.90	3.46
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		33.5	9.67	3.20
	Strontium (Sr)-Dissolved (mg/L)		2.33	0.484	0.566
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	0.000040	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.000113	0.00177	0.00170
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0024	0.0014	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2308370-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2308370-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			



## Reference Information

electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-CFA-ED** Water TKN in Water by Colour APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190710Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 1 of 14

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713775</b>							
<b>WG3107373-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.5		%		85-115	15-JUL-19
<b>WG3107373-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	15-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713893</b>							
<b>WG3107387-21</b>	<b>DUP</b>	<b>L2308370-1</b>						
Alkalinity, Total (as CaCO3)		301	294		mg/L	2.4	20	15-JUL-19
<b>WG3107387-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	15-JUL-19
<b>WG3107387-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUL-19
<b>Batch</b>	<b>R4714455</b>							
<b>WG3108618-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.9		%		85-115	17-JUL-19
<b>WG3108618-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712047</b>							
<b>WG3104842-3</b>	<b>DUP</b>	<b>L2308370-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	15-JUL-19
<b>WG3104842-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.2		%		80-120	15-JUL-19
<b>WG3104842-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	15-JUL-19
<b>WG3104842-4</b>	<b>MS</b>	<b>L2308370-2</b>						
Beryllium (Be)-Dissolved			103.3		%		70-130	15-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709429</b>							
<b>WG3104310-2</b>	<b>LCS</b>							
Bromide (Br)			98.0		%		85-115	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 2 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4711861							
<b>WG3105462-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.3		%		80-120	14-JUL-19
<b>WG3105462-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-JUL-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4711861							
<b>WG3105462-2</b>	<b>LCS</b>							
Total Organic Carbon			107.3		%		80-120	14-JUL-19
<b>WG3105462-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	14-JUL-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4709429							
<b>WG3104310-2</b>	<b>LCS</b>							
Chloride (Cl)			95.2		%		90-110	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-JUL-19
<b>COLOUR-TRUE-CL</b> <b>Water</b>								
Batch	R4708326							
<b>WG3102814-2</b>	<b>LCS</b>							
Colour, True			99.6		%		85-115	11-JUL-19
<b>WG3102814-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	11-JUL-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4713893							
<b>WG3107387-21</b>	<b>DUP</b>	<b>L2308370-1</b>						
Conductivity (@ 25C)		719	711		uS/cm	1.1	10	15-JUL-19
<b>WG3107387-20</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.2		%		90-110	15-JUL-19
<b>WG3107387-19</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-JUL-19
Batch	R4714455							
<b>WG3108618-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			93.1		%		90-110	17-JUL-19
<b>WG3108618-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUL-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 3 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4709429</b>							
<b>WG3104310-2</b>	<b>LCS</b>							
Fluoride (F)			97.6		%		90-110	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-JUL-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4712364</b>							
<b>WG3105873-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.0		%		80-120	16-JUL-19
<b>WG3105873-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-JUL-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4712047</b>							
<b>WG3104842-3</b>	<b>DUP</b>	<b>L2308370-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	15-JUL-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUL-19
Arsenic (As)-Dissolved		0.00019	0.00018		mg/L	4.4	20	15-JUL-19
Barium (Ba)-Dissolved		0.0341	0.0341		mg/L	0.2	20	15-JUL-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUL-19
Boron (B)-Dissolved		0.179	0.180		mg/L	0.7	20	15-JUL-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	15-JUL-19
Calcium (Ca)-Dissolved		93.4	95.2		mg/L	1.9	20	15-JUL-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUL-19
Cobalt (Co)-Dissolved		0.00017	0.00016		mg/L	5.3	20	15-JUL-19
Iron (Fe)-Dissolved		0.098	0.098		mg/L	0.4	20	15-JUL-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	15-JUL-19
Lithium (Li)-Dissolved		0.127	0.133		mg/L	4.3	20	15-JUL-19
Magnesium (Mg)-Dissolved		30.5	30.8		mg/L	1.1	20	15-JUL-19
Manganese (Mn)-Dissolved		0.0299	0.0299		mg/L	0.1	20	15-JUL-19
Molybdenum (Mo)-Dissolved		0.000332	0.000355		mg/L	6.8	20	15-JUL-19
Nickel (Ni)-Dissolved		0.00056	0.00058		mg/L	3.7	20	15-JUL-19
Potassium (K)-Dissolved		2.69	2.72		mg/L	1.1	20	15-JUL-19
Selenium (Se)-Dissolved		0.000102	0.000092		mg/L	10	20	15-JUL-19
Silicon (Si)-Dissolved		4.71	4.62		mg/L	1.8	20	15-JUL-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUL-19
Sodium (Na)-Dissolved		33.5	34.0		mg/L	1.7	20	15-JUL-19
Strontium (Sr)-Dissolved		2.33	2.35		mg/L	0.9	20	15-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 4 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712047</b>							
<b>WG3104842-3</b>	<b>DUP</b>	<b>L2308370-1</b>						
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	15-JUL-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	15-JUL-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	15-JUL-19
Uranium (U)-Dissolved		0.000113	0.000118		mg/L	4.4	20	15-JUL-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	15-JUL-19
Zinc (Zn)-Dissolved		0.0024	0.0023		mg/L	5.6	20	15-JUL-19
<b>WG3104842-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.5		%		80-120	15-JUL-19
Antimony (Sb)-Dissolved			104.8		%		80-120	15-JUL-19
Arsenic (As)-Dissolved			99.2		%		80-120	15-JUL-19
Barium (Ba)-Dissolved			101.4		%		80-120	15-JUL-19
Bismuth (Bi)-Dissolved			98.2		%		80-120	15-JUL-19
Boron (B)-Dissolved			101.7		%		80-120	15-JUL-19
Cadmium (Cd)-Dissolved			99.1		%		80-120	15-JUL-19
Calcium (Ca)-Dissolved			103.0		%		80-120	15-JUL-19
Chromium (Cr)-Dissolved			101.5		%		80-120	15-JUL-19
Cobalt (Co)-Dissolved			100.3		%		80-120	15-JUL-19
Copper (Cu)-Dissolved			99.2		%		80-120	15-JUL-19
Iron (Fe)-Dissolved			102.0		%		80-120	15-JUL-19
Lead (Pb)-Dissolved			101.1		%		80-120	15-JUL-19
Lithium (Li)-Dissolved			104.9		%		80-120	15-JUL-19
Magnesium (Mg)-Dissolved			105.3		%		80-120	15-JUL-19
Manganese (Mn)-Dissolved			102.6		%		80-120	15-JUL-19
Molybdenum (Mo)-Dissolved			101.9		%		80-120	15-JUL-19
Nickel (Ni)-Dissolved			99.6		%		80-120	15-JUL-19
Potassium (K)-Dissolved			102.3		%		80-120	15-JUL-19
Selenium (Se)-Dissolved			101.1		%		80-120	15-JUL-19
Silicon (Si)-Dissolved			108.2		%		60-140	15-JUL-19
Silver (Ag)-Dissolved			103.4		%		80-120	15-JUL-19
Sodium (Na)-Dissolved			103.5		%		80-120	15-JUL-19
Strontium (Sr)-Dissolved			103.7		%		80-120	15-JUL-19
Thallium (Tl)-Dissolved			101.4		%		80-120	15-JUL-19
Tin (Sn)-Dissolved			102.2		%		80-120	15-JUL-19
Titanium (Ti)-Dissolved			100.0		%		80-120	15-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 5 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712047</b>							
<b>WG3104842-2</b>	<b>LCS</b>							
Uranium (U)-Dissolved			101.0		%		80-120	15-JUL-19
Vanadium (V)-Dissolved			101.5		%		80-120	15-JUL-19
Zinc (Zn)-Dissolved			100.3		%		80-120	15-JUL-19
<b>WG3104842-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	15-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	15-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	15-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	15-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	15-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	15-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	15-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	15-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	15-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	15-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	15-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	15-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	15-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	15-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	15-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	15-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	15-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	15-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	15-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	15-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	15-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	15-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	15-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	15-JUL-19
<b>WG3104842-4</b>	<b>MS</b>	<b>L2308370-2</b>						



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 6 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712047</b>							
<b>WG3104842-4</b>	<b>MS</b>	<b>L2308370-2</b>						
Aluminum (Al)-Dissolved			99.9		%		70-130	15-JUL-19
Antimony (Sb)-Dissolved			109.4		%		70-130	15-JUL-19
Arsenic (As)-Dissolved			100.5		%		70-130	15-JUL-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Bismuth (Bi)-Dissolved			92.2		%		70-130	15-JUL-19
Boron (B)-Dissolved			101.1		%		70-130	15-JUL-19
Cadmium (Cd)-Dissolved			102.4		%		70-130	15-JUL-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Chromium (Cr)-Dissolved			99.5		%		70-130	15-JUL-19
Cobalt (Co)-Dissolved			94.9		%		70-130	15-JUL-19
Copper (Cu)-Dissolved			92.9		%		70-130	15-JUL-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Lead (Pb)-Dissolved			96.8		%		70-130	15-JUL-19
Lithium (Li)-Dissolved			105.4		%		70-130	15-JUL-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Molybdenum (Mo)-Dissolved			103.3		%		70-130	15-JUL-19
Nickel (Ni)-Dissolved			94.7		%		70-130	15-JUL-19
Potassium (K)-Dissolved			93.0		%		70-130	15-JUL-19
Selenium (Se)-Dissolved			108.7		%		70-130	15-JUL-19
Silicon (Si)-Dissolved			100.9		%		70-130	15-JUL-19
Silver (Ag)-Dissolved			73.0		%		70-130	15-JUL-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	15-JUL-19
Thallium (Tl)-Dissolved			96.9		%		70-130	15-JUL-19
Tin (Sn)-Dissolved			105.2		%		70-130	15-JUL-19
Titanium (Ti)-Dissolved			100.5		%		70-130	15-JUL-19
Uranium (U)-Dissolved			95.8		%		70-130	15-JUL-19
Vanadium (V)-Dissolved			100.8		%		70-130	15-JUL-19
Zinc (Zn)-Dissolved			95.1		%		70-130	15-JUL-19
<b>Batch</b>	<b>R4712953</b>							
<b>WG3106589-3</b>	<b>DUP</b>	<b>L2308370-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	16-JUL-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUL-19





## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 7 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712953</b>							
<b>WG3106589-3</b>	<b>DUP</b>	<b>L2308370-1</b>						
Arsenic (As)-Dissolved		0.00019	0.00018		mg/L	3.6	20	16-JUL-19
Barium (Ba)-Dissolved		0.0341	0.0332		mg/L	0.8	20	16-JUL-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUL-19
Boron (B)-Dissolved		0.179	0.175		mg/L	4.1	20	16-JUL-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	16-JUL-19
Calcium (Ca)-Dissolved		93.4	95.3		mg/L	2.0	20	16-JUL-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUL-19
Cobalt (Co)-Dissolved		0.00017	0.00016		mg/L	3.1	20	16-JUL-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-JUL-19
Iron (Fe)-Dissolved		0.098	0.097		mg/L	0.1	20	16-JUL-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	16-JUL-19
Lithium (Li)-Dissolved		0.127	0.126		mg/L	6.5	20	16-JUL-19
Magnesium (Mg)-Dissolved		30.5	31.8		mg/L	0.1	20	16-JUL-19
Manganese (Mn)-Dissolved		0.0299	0.0300		mg/L	0.2	20	16-JUL-19
Molybdenum (Mo)-Dissolved		0.000332	0.000339		mg/L	2.7	20	16-JUL-19
Nickel (Ni)-Dissolved		0.00056	<0.00050	RPD-NA	mg/L	N/A	20	16-JUL-19
Potassium (K)-Dissolved		2.69	2.83		mg/L	1.1	20	16-JUL-19
Silicon (Si)-Dissolved		4.71	4.54		mg/L	3.7	20	16-JUL-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUL-19
Sodium (Na)-Dissolved		33.5	35.7		mg/L	0.1	20	16-JUL-19
Strontium (Sr)-Dissolved		2.33	2.28		mg/L	2.3	20	16-JUL-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	16-JUL-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	16-JUL-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	16-JUL-19
Uranium (U)-Dissolved		0.000113	0.000115		mg/L	2.5	20	16-JUL-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	16-JUL-19
Zinc (Zn)-Dissolved		0.0024	0.0019		mg/L	2.7	20	16-JUL-19
<b>WG3106589-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			112.5		%		80-120	16-JUL-19
Antimony (Sb)-Dissolved			96.0		%		80-120	16-JUL-19
Arsenic (As)-Dissolved			100.9		%		80-120	16-JUL-19
Barium (Ba)-Dissolved			103.8		%		80-120	16-JUL-19
Bismuth (Bi)-Dissolved			99.5		%		80-120	16-JUL-19
Boron (B)-Dissolved			95.5		%		80-120	16-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 8 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712953</b>							
<b>WG3106589-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			96.4		%		80-120	16-JUL-19
Calcium (Ca)-Dissolved			100.0		%		80-120	16-JUL-19
Chromium (Cr)-Dissolved			102.0		%		80-120	16-JUL-19
Cobalt (Co)-Dissolved			98.1		%		80-120	16-JUL-19
Copper (Cu)-Dissolved			97.4		%		80-120	16-JUL-19
Iron (Fe)-Dissolved			101.9		%		80-120	16-JUL-19
Lead (Pb)-Dissolved			99.6		%		80-120	16-JUL-19
Lithium (Li)-Dissolved			103.3		%		80-120	16-JUL-19
Magnesium (Mg)-Dissolved			106.1		%		80-120	16-JUL-19
Manganese (Mn)-Dissolved			104.1		%		80-120	16-JUL-19
Molybdenum (Mo)-Dissolved			97.0		%		80-120	16-JUL-19
Nickel (Ni)-Dissolved			99.3		%		80-120	16-JUL-19
Potassium (K)-Dissolved			110.4		%		80-120	16-JUL-19
Selenium (Se)-Dissolved			103.6		%		80-120	16-JUL-19
Silicon (Si)-Dissolved			100.2		%		60-140	16-JUL-19
Silver (Ag)-Dissolved			96.6		%		80-120	16-JUL-19
Sodium (Na)-Dissolved			110.9		%		80-120	16-JUL-19
Strontium (Sr)-Dissolved			100.2		%		80-120	16-JUL-19
Thallium (Tl)-Dissolved			98.3		%		80-120	16-JUL-19
Tin (Sn)-Dissolved			97.0		%		80-120	16-JUL-19
Titanium (Ti)-Dissolved			104.0		%		80-120	16-JUL-19
Uranium (U)-Dissolved			101.2		%		80-120	16-JUL-19
Vanadium (V)-Dissolved			101.5		%		80-120	16-JUL-19
Zinc (Zn)-Dissolved			95.6		%		80-120	16-JUL-19
<b>WG3106589-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	16-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	16-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	16-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	16-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	16-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 9 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712953</b>							
<b>WG3106589-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	16-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	16-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	16-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	16-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	16-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	16-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	16-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	16-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	16-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	16-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	16-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	16-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	16-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	16-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	16-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	16-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	16-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	16-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	16-JUL-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709831</b>							
<b>WG3104573-6</b>	<b>LCS</b>							
Ammonia as N			108.8		%		85-115	13-JUL-19
<b>WG3104573-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-JUL-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709429</b>							
<b>WG3104310-2</b>	<b>LCS</b>							
Nitrite (as N)			104.1		%		90-110	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUL-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 10 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4709429							
<b>WG3104310-2</b>	<b>LCS</b>							
Nitrate (as N)			102.1		%		90-110	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	12-JUL-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4714224							
<b>WG3108445-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	17-JUL-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4713918							
<b>WG3107929-35</b>	<b>DUP</b>	<b>L2308370-3</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	17-JUL-19
<b>WG3107929-34</b>	<b>LCS</b>							
Phosphorus (P)-Total			119.7		%		80-120	17-JUL-19
<b>WG3107929-33</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	17-JUL-19
<b>WG3107929-36</b>	<b>MS</b>	<b>L2308370-3</b>						
Phosphorus (P)-Total			108.6		%		70-130	17-JUL-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4713918							
<b>WG3107929-35</b>	<b>DUP</b>	<b>L2308370-3</b>						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	17-JUL-19
<b>WG3107929-34</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			119.7		%		80-120	17-JUL-19
<b>WG3107929-33</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	17-JUL-19
<b>WG3107929-36</b>	<b>MS</b>	<b>L2308370-3</b>						
Phosphorus (P)-Total Dissolved			105.3		%		70-130	17-JUL-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4713893							
<b>WG3107387-21</b>	<b>DUP</b>	<b>L2308370-1</b>						
pH		8.16	8.09	J	pH	0.07	0.2	15-JUL-19
<b>WG3107387-20</b>	<b>LCS</b>							
pH			7.05		pH		6.9-7.1	15-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 11 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4714455							
<b>WG3108618-2</b>	<b>LCS</b>							
pH			7.04		pH		6.9-7.1	17-JUL-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4709287							
<b>WG3103980-8</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			103.6		%		80-120	12-JUL-19
<b>WG3103980-7</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	12-JUL-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4709429							
<b>WG3104310-2</b>	<b>LCS</b>							
Sulfate (SO4)			95.5		%		90-110	12-JUL-19
<b>WG3104310-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	12-JUL-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4713729							
<b>WG3106856-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.8		%		85-115	17-JUL-19
<b>WG3106856-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	17-JUL-19
<b>TKN-L-CFA-ED</b>	<b>Water</b>							
Batch	R4719163							
<b>WG3110293-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95		%		75-125	20-JUL-19
<b>WG3110293-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96		%		75-125	20-JUL-19
<b>WG3110293-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUL-19
<b>WG3110293-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	20-JUL-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4714623							
<b>WG3106244-6</b>	<b>LCS</b>							
Total Suspended Solids			91.4		%		85-115	17-JUL-19
<b>WG3106244-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	17-JUL-19



## Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 12 of 14

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4708627							
<b>WG3102647-28 LCS</b>								
Turbidity			95.0		%		85-115	11-JUL-19
<b>WG3102647-29 MB</b>								
Turbidity			<0.10		NTU		0.1	11-JUL-19

# Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 13 of 14

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2308370

Report Date: 23-JUL-19

Page 14 of 14

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	10-JUL-19 12:40	17-JUL-19 09:15	0.25	165	hours	EHTR-FM
	2	10-JUL-19 15:15	17-JUL-19 09:15	0.25	162	hours	EHTR-FM
	3	10-JUL-19 09:55	17-JUL-19 09:15	0.25	167	hours	EHTR-FM
pH	1	10-JUL-19 12:40	15-JUL-19 09:00	0.25	116	hours	EHTR-FM
	2	10-JUL-19 15:15	17-JUL-19 15:00	0.25	168	hours	EHTR-FM
	3	10-JUL-19 09:55	17-JUL-19 15:00	0.25	173	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2308370 were received on 11-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



**Teck**

COC ID: 20190710Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyndyia Shvets			Email 1:	Bryan.Ordan@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyndyia.shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com		X	X	X
Email	Cameron.Griffin@teck.com			Address	2519 29 St NE,			Email 3:	kimberley.hackett@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@teck.com		X	X	X
								Email 5:	TeckLabs.Results@sharepoint.teck.com		X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VPO00610852				
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897								

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	C-Grab C-Comp	# Of Cont.	FILTERED / UNFILTERED	ANALYSIS REQUESTED											
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	
								TECKCOAL-ROUTINE-VA (E305-1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 4310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury		
EV_BALgw_WG_2019_Q3_NP	EV_BALgw	WG	N	7/10/2019	12:40	G	5		1		1				1			1		
EV_LSGw_WG_2019_Q3_NP	EV_LSGw	WG	N	7/10/2019	15:15	G	5		1		1				1			1		
EV_GV3gw_WG_2019_Q3_NP	EV_GV3gw	WG	N	7/10/2019	9:55	G	5		1		1				1			1		
Total							15													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	July 10, 2019	<i>[Signature]</i>	July 10, 2019

NR OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett <i>[Signature]</i>	
	Sampler's Signature	Date/Time
		July 10, 2019



L2308370-COFC

*[Handwritten initials]*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 12-JUL-19  
Report Date: 26-JUL-19 17:46 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2309124  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190711q3gw  
Legal Site Desc:

Comments: Samples L2309124-1 to -3 expired for Colour.

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2309124-1	L2309124-2	L2309124-3		
		Description	WG	WG	WG		
		Sampled Date	11-JUL-19	11-JUL-19	11-JUL-19		
		Sampled Time	13:15	14:55	15:20		
		Client ID	EV_ECGW_WG_2 019-Q3_NP	EV_WH50GW_WG _2019-Q3_NP	EV_RCSGW_WG_ 2019-Q3_NP		
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0		
	Conductivity (@ 25C) (uS/cm)		423	345	2390		
	Hardness (as CaCO3) (mg/L)		162	175	1570		
	pH (pH)		8.51	8.50	8.31		
	ORP (mV)		433	359	460		
	Total Suspended Solids (mg/L)		252	1.7	1.2		
	Total Dissolved Solids (mg/L)		273 <sup>DLHC</sup>	195 <sup>DLHC</sup>	2120 <sup>DLHC</sup>		
	Turbidity (NTU)		234	1.47	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		<1.0	<1.0	12.8		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		248	139	314		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		7.4	5.8	5.8		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		255	144	319		
	Ammonia as N (mg/L)		0.115	<0.0050	0.0056		
	Bromide (Br) (mg/L)		<0.050	<0.050	0.68 <sup>DLHC</sup>		
	Chloride (Cl) (mg/L)		0.54	1.03	8.4 <sup>DLHC</sup>		
	Fluoride (F) (mg/L)		0.814	0.145	0.12 <sup>DLHC</sup>		
	Ion Balance (%)		82.4 <sup>BL:INT</sup>	93.0	95.2 <sup>DLHC</sup>		
	Nitrate (as N) (mg/L)		0.0204	0.414	32.6 <sup>DLHC</sup>		
	Nitrite (as N) (mg/L)		0.0018	<0.0010	<0.0050 <sup>DLHC</sup>		
	Total Kjeldahl Nitrogen (mg/L)		0.489	0.194	<0.050 <sup>TKNI</sup>		
	Total Nitrogen (mg/L)		0.511	0.608	32.6		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0089	0.0057	0.0028		
	Phosphorus (P)-Total Dissolved (mg/L)		0.0086	0.0070	0.0031		
	Phosphorus (P)-Total (mg/L)		0.366 <sup>DLHC</sup>	0.0072 <sup>DLM</sup>	0.0037 <sup>DLHC</sup>		
	Sulfate (SO4) (mg/L)		27.0	45.3	1170		
	Anion Sum (meq/L)		5.72	3.89	33.2		
	Cation Sum (meq/L)		4.71	3.62	31.7		
	Cation - Anion Balance (%)		-9.7	-3.6	-2.4		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.52	0.63	1.04		
	Total Organic Carbon (mg/L)		<5.0	0.64	1.10		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)		0.00045	0.00017	<0.00020 <sup>DLA</sup>		
	Arsenic (As)-Dissolved (mg/L)		0.00028	0.00013	<0.00020 <sup>DLA</sup>		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2309124-1	L2309124-2	L2309124-3
		Description	WG	WG	WG
		Sampled Date	11-JUL-19	11-JUL-19	11-JUL-19
		Sampled Time	13:15	14:55	15:20
		Client ID	EV_ECGW_WG_2 019-Q3_NP	EV_WH50GW_WG_ _2019-Q3_NP	EV_RCSGW_WG_ 2019-Q3_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0479	0.0675	0.0355 <sup>DLA</sup>
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.040 <sup>DLA</sup>
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.00010 <sup>DLA</sup>
	Boron (B)-Dissolved (mg/L)		0.119	0.012	<0.020 <sup>DLA</sup>
	Cadmium (Cd)-Dissolved (ug/L)		0.0278	0.0146	0.277
	Calcium (Ca)-Dissolved (mg/L)		38.0	45.1	343
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00020 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (ug/L)		0.28	<0.10	<0.20 <sup>DLA</sup>
	Copper (Cu)-Dissolved (mg/L)		0.00059	0.00098	0.118 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.015	<0.020
	Lead (Pb)-Dissolved (mg/L)		0.000086	<0.000050	0.00054
	Lithium (Li)-Dissolved (mg/L)		0.0121	0.0076	0.0632
	Magnesium (Mg)-Dissolved (mg/L)		16.3	15.3	173
	Manganese (Mn)-Dissolved (mg/L)		0.148	0.00297	0.00731
	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.0148	0.00131	0.00137
	Nickel (Ni)-Dissolved (mg/L)		0.00184	<0.00050	0.0044
	Potassium (K)-Dissolved (mg/L)		1.70	0.770	3.16
	Selenium (Se)-Dissolved (ug/L)		0.206	4.13	215
	Silicon (Si)-Dissolved (mg/L)		4.58	2.14	4.24
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000020 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)		32.5	2.14	4.92
	Strontium (Sr)-Dissolved (mg/L)		0.442	0.110	0.410
	Thallium (Tl)-Dissolved (mg/L)		0.000041	<0.000010	<0.000020 <sup>DLA</sup>
	Tin (Sn)-Dissolved (mg/L)		0.00050	<0.00010	<0.00020 <sup>DLA</sup>
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00179	0.000705	0.00689 <sup>DLA</sup>
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Zinc (Zn)-Dissolved (mg/L)		<0.0020 <sup>DLB</sup>	<0.0030 <sup>DLB</sup>	0.275

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Zinc (Zn)-Dissolved	MB-LOR	L2309124-1, -2, -3
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2309124-1, -2, -3
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2309124-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLA	Detection Limit adjusted for required dilution
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon			

## Reference Information

dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**COLOUR-TRUE-CL** Water Colour (True) by Spectrometer APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

## Reference Information

<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = $\frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190711q3gw

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4714459							
<b>WG3108575-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.3		%		85-115	17-JUL-19
<b>WG3108575-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	17-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4714452							
<b>WG3108621-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			108.6		%		85-115	17-JUL-19
<b>WG3108621-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4711376							
<b>WG3104741-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	14-JUL-19
<b>WG3104741-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4709493							
<b>WG3104397-18</b>	<b>LCS</b>							
Bromide (Br)			102.8		%		85-115	12-JUL-19
<b>WG3104397-17</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	12-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4713504							
<b>WG3107549-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.6		%		80-120	16-JUL-19
<b>WG3107549-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4713504							
<b>WG3107549-2</b>	<b>LCS</b>							
Total Organic Carbon			109.8		%		80-120	16-JUL-19
<b>WG3107549-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-JUL-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4709493							
<b>WG3104397-18</b>	<b>LCS</b>							
Chloride (Cl)			104.4		%		90-110	12-JUL-19
<b>WG3104397-17</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	12-JUL-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4711946							
<b>WG3105338-3</b>	<b>DUP</b>	<b>L2309124-3</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	15-JUL-19
<b>WG3105338-2</b>	<b>LCS</b>							
Colour, True			100.7		%		85-115	15-JUL-19
<b>WG3105338-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	15-JUL-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4714452							
<b>WG3108621-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.2		%		90-110	17-JUL-19
<b>WG3108621-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	17-JUL-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4709493							
<b>WG3104397-18</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	12-JUL-19
<b>WG3104397-17</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	12-JUL-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4712364							
<b>WG3106372-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.4		%		80-120	16-JUL-19
<b>WG3106372-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-JUL-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4711376							
<b>WG3104741-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.6		%		80-120	14-JUL-19
Antimony (Sb)-Dissolved			100.6		%		80-120	14-JUL-19
Arsenic (As)-Dissolved			96.0		%		80-120	14-JUL-19
Barium (Ba)-Dissolved			95.6		%		80-120	14-JUL-19



## Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4711376</b>							
<b>WG3104741-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			100.2		%		80-120	14-JUL-19
Boron (B)-Dissolved			102.7		%		80-120	14-JUL-19
Cadmium (Cd)-Dissolved			97.7		%		80-120	14-JUL-19
Calcium (Ca)-Dissolved			101.4		%		80-120	14-JUL-19
Chromium (Cr)-Dissolved			102.0		%		80-120	14-JUL-19
Cobalt (Co)-Dissolved			99.2		%		80-120	14-JUL-19
Copper (Cu)-Dissolved			97.9		%		80-120	14-JUL-19
Iron (Fe)-Dissolved			97.3		%		80-120	14-JUL-19
Lead (Pb)-Dissolved			100.3		%		80-120	14-JUL-19
Lithium (Li)-Dissolved			95.6		%		80-120	14-JUL-19
Magnesium (Mg)-Dissolved			100.2		%		80-120	14-JUL-19
Manganese (Mn)-Dissolved			100.1		%		80-120	14-JUL-19
Molybdenum (Mo)-Dissolved			102.2		%		80-120	14-JUL-19
Nickel (Ni)-Dissolved			98.0		%		80-120	14-JUL-19
Potassium (K)-Dissolved			98.9		%		80-120	14-JUL-19
Selenium (Se)-Dissolved			102.7		%		80-120	14-JUL-19
Silicon (Si)-Dissolved			105.7		%		60-140	14-JUL-19
Silver (Ag)-Dissolved			103.2		%		80-120	14-JUL-19
Sodium (Na)-Dissolved			103.1		%		80-120	14-JUL-19
Strontium (Sr)-Dissolved			99.5		%		80-120	14-JUL-19
Thallium (Tl)-Dissolved			99.9		%		80-120	14-JUL-19
Tin (Sn)-Dissolved			100.8		%		80-120	14-JUL-19
Titanium (Ti)-Dissolved			96.6		%		80-120	14-JUL-19
Uranium (U)-Dissolved			94.5		%		80-120	14-JUL-19
Vanadium (V)-Dissolved			99.9		%		80-120	14-JUL-19
Zinc (Zn)-Dissolved			96.9		%		80-120	14-JUL-19
<b>WG3104741-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-JUL-19



## Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4711376</b>							
<b>WG3104741-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	14-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-JUL-19
Zinc (Zn)-Dissolved			0.0010	MB-LOR	mg/L		0.001	14-JUL-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713071</b>							
<b>WG3105806-6</b>	<b>LCS</b>							
Ammonia as N			98.9		%		85-115	15-JUL-19
<b>WG3105806-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	15-JUL-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4709493</b>							
<b>WG3104397-18</b>	<b>LCS</b>							
Nitrite (as N)			106.8		%		90-110	12-JUL-19
<b>WG3104397-17</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	12-JUL-19







## Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4716449</b>							
<b>WG3108081-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-JUL-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4710370</b>							
<b>WG3104811-3</b>	<b>DUP</b>	<b>L2309124-3</b>						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	14-JUL-19
<b>WG3104811-2</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	14-JUL-19
<b>WG3104811-5</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	14-JUL-19
<b>WG3104811-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-JUL-19
<b>WG3104811-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-JUL-19

# Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2309124

Report Date: 26-JUL-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Colour (True) by Spectrometer							
	1	11-JUL-19 13:15	15-JUL-19 09:00	3	4	days	EHT
	2	11-JUL-19 14:55	15-JUL-19 09:00	3	4	days	EHT
	3	11-JUL-19 15:20	15-JUL-19 09:00	3	4	days	EHT
Oxidation redution potential by elect.							
	1	11-JUL-19 13:15	17-JUL-19 15:00	0.25	146	hours	EHTR-FM
	2	11-JUL-19 14:55	17-JUL-19 15:00	0.25	144	hours	EHTR-FM
	3	11-JUL-19 15:20	17-JUL-19 15:00	0.25	144	hours	EHTR-FM
pH							
	1	11-JUL-19 13:15	17-JUL-19 16:00	0.25	147	hours	EHTR-FM
	2	11-JUL-19 14:55	17-JUL-19 16:00	0.25	145	hours	EHTR-FM
	3	11-JUL-19 15:20	17-JUL-19 16:00	0.25	145	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2309124 were received on 12-JUL-19 10:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 20190711Q3GW		TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	bryan.dgden@teck.com	Y	Y	Y
Project Manager	Cameron Griffin		Email	Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@eggsenline.com	Y	Y	Y
Email	Cameron.Griffin@teck.com		Address	2559 29 St NE		Email 3:	kimberley.hackett@teck.com	Y	Y	Y
Address	RR#1 HWY# 3					Email 4:	Cameron.Griffin@teck.com	Y	Y	Y
						Email 5:	tecklab.results@aha.point.teck.com	Y	Y	Y
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO #	VPO00610852	
Postal Code	V1C 4C3	Country	Canada	Postal Code	T1Y 7B5	Country	Canada			
Phone Number	1-250-865-5289		Phone Number	1 403 291 9897						

1  
2  
3

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	PRESERVED	ANALYSIS REQUESTED										
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes
									Nitric	Sulphuric	Sulphuric	Sulphuric	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury		
EV_ECgw_WG_2019_Q3_NP	EV_ECgw	WG	N	7/11/2019	13:15	G	5	TECKCOAL-ROUTINE-VA (E303 1)	1		1		1				1		
EV_WH50gw_WG_2019_Q3_NP	EV_WH50gw	WG	N	7/11/2019	14:55	G	5	True Colour		1		1					1		
EV_RCSgw_WG_2019_Q3_NP	EV_RCSgw	WG	N	7/11/2019	15:28	G	5	TECKCOAL-MET-D-VA (SW6020)	1		1		1				1		
Total							15												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELIQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Ultra-trace Mercury samples are unfiltered and unpreserved Total Methyl Mercury samples are preserved but unfiltered Total Selenium samples are preserved but unfiltered Dissolved Selenium samples are preserved and filtered	Kimberley Hackett	July 11, 2019	<i>[Signature]</i>	7/12/2019

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett <i>[Signature]</i>	
	Sampler's Signature	Date/Time
		July 11, 2019



L2309124-COFC

10



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 13-JUL-19  
Report Date: 24-JUL-19 12:39 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2309604  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190712Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2309604-1	L2309604-2	L2309604-3	L2309604-4
		Description	WG	WG	WG	WG
		Sampled Date	12-JUL-19	12-JUL-19	12-JUL-19	12-JUL-19
		Sampled Time	14:25	14:30	14:35	14:20
		Client ID	EV_EC5GW_WG_2019_Q3_NP	EV_EC6GW_WG_2019_Q3_NP	EV_EC7GW_WG_2019_Q3_NP	EV_GCGW_WG_2019_Q3_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)		453	<2.0	<2.0	456
	Hardness (as CaCO3) (mg/L)		231	<0.50	<0.50	231
	pH (pH)		8.25	5.61	5.55	8.26
	ORP (mV)		336	360	466	317
	Total Suspended Solids (mg/L)		1.9	<1.0	<1.0	1.8
	Total Dissolved Solids (mg/L)		260 <sup>DLHC</sup>	<10	<10	259 <sup>DLHC</sup>
	Turbidity (NTU)		1.75	<0.10	<0.10	2.29
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		1.6	1.6	1.6	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		178	<1.0	<1.0	181
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		178	<1.0	<1.0	181
	Ammonia as N (mg/L)		0.0197	<0.0050	<0.0050	0.0204
	Bromide (Br) (mg/L)		<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)		4.82	<0.50	<0.50	4.72
	Fluoride (F) (mg/L)		0.441	<0.020	<0.020	0.429
	Ion Balance (%)		93.5	0.0	0.0	93.3
	Nitrate (as N) (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.074	<0.050	<0.050	0.067
	Total Nitrogen (mg/L)		0.074	<0.050	<0.050	0.067
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)		<0.0020	<0.0020	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)		<0.0020	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		69.1	<0.30	<0.30	68.3
	Anion Sum (meq/L)		5.16	<0.10	<0.10	5.19
	Cation Sum (meq/L)		4.82	<0.10	<0.10	4.84
	Cation - Anion Balance (%)		-3.3	0.0	0.0	-3.5
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)		<0.50	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00201	<0.00010	<0.00010	0.00198

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2309604-1	L2309604-2	L2309604-3	L2309604-4
					WG	WG	WG	WG
		12-JUL-19	14:25	EV_EC5GW_WG_2019_Q3_NP	12-JUL-19	14:30	12-JUL-19	14:20
					EV_EC5GW_WG_2019_Q3_NP	EV_EC6GW_WG_2019_Q3_NP	EV_EC7GW_WG_2019_Q3_NP	EV_GCGW_WG_2019_Q3_NP
Grouping	Analyte							
<b>WATER</b>								
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0674	<0.00010	<0.00010	0.0685			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.012	<0.010	<0.010	0.012			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	61.9	<0.050	<0.050	62.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.21	<0.10	<0.10	0.20			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.282	<0.010	<0.010	0.273			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0076	<0.0010	<0.0010	0.0076			
	Magnesium (Mg)-Dissolved (mg/L)	18.4	<0.10	<0.10	18.5			
	Manganese (Mn)-Dissolved (mg/L)	0.0919	<0.00010	<0.00010	0.0959			
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00243	<0.000050	<0.000050	0.00250			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.727	<0.050	<0.050	0.750			
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050			
	Silicon (Si)-Dissolved (mg/L)	4.37	<0.050	<0.050	4.35			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.11	<0.050	<0.050	4.09			
	Strontium (Sr)-Dissolved (mg/L)	0.254	<0.00020	<0.00020	0.260			
	Thallium (Tl)-Dissolved (mg/L)	0.000020	<0.000010	<0.000010	0.000020			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00120	<0.000010	<0.000010	0.00121			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2309604-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2309604-1, -2, -3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2309604-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2309604-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2309604-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190712Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



# Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4716493</b>							
<b>WG3109835-9</b>	<b>DUP</b>	<b>L2309604-4</b>						
Acidity (as CaCO3)		1.7	1.6		mg/L	8.6	20	18-JUL-19
<b>WG3109835-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.8		%		85-115	18-JUL-19
<b>WG3109835-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	18-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4719769</b>							
<b>WG3111554-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.5		%		85-115	19-JUL-19
<b>WG3111554-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	19-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4714060</b>							
<b>WG3106964-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.6		%		80-120	17-JUL-19
<b>WG3106964-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712407</b>							
<b>WG3106206-2</b>	<b>LCS</b>							
Bromide (Br)			97.0		%		85-115	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713576</b>							
<b>WG3107618-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.6		%		80-120	16-JUL-19
<b>WG3107618-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-JUL-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713576</b>							
<b>WG3107618-2</b>	<b>LCS</b>							
Total Organic Carbon			99.2		%		80-120	16-JUL-19
<b>WG3107618-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	16-JUL-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4712407							
<b>WG3106206-2</b>	<b>LCS</b>							
Chloride (Cl)			95.8		%		90-110	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-JUL-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4711946							
<b>WG3105338-2</b>	<b>LCS</b>							
Colour, True			100.7		%		85-115	15-JUL-19
<b>WG3105338-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	15-JUL-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4719769							
<b>WG3111554-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	19-JUL-19
<b>WG3111554-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	19-JUL-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4712407							
<b>WG3106206-2</b>	<b>LCS</b>							
Fluoride (F)			98.2		%		90-110	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-JUL-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4713351							
<b>WG3107736-3</b>	<b>DUP</b>	<b>L2309604-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	17-JUL-19
<b>WG3107736-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.2		%		80-120	17-JUL-19
<b>WG3107736-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	17-JUL-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4714060							
<b>WG3106964-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.2		%		80-120	17-JUL-19
Antimony (Sb)-Dissolved			98.3		%		80-120	17-JUL-19
Arsenic (As)-Dissolved			99.4		%		80-120	17-JUL-19
Barium (Ba)-Dissolved			98.5		%		80-120	17-JUL-19



## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4714060</b>							
<b>WG3106964-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			98.2		%		80-120	17-JUL-19
Boron (B)-Dissolved			95.5		%		80-120	17-JUL-19
Cadmium (Cd)-Dissolved			95.5		%		80-120	17-JUL-19
Calcium (Ca)-Dissolved			97.8		%		80-120	17-JUL-19
Chromium (Cr)-Dissolved			100.5		%		80-120	17-JUL-19
Cobalt (Co)-Dissolved			97.5		%		80-120	17-JUL-19
Copper (Cu)-Dissolved			98.4		%		80-120	17-JUL-19
Iron (Fe)-Dissolved			101.4		%		80-120	17-JUL-19
Lead (Pb)-Dissolved			97.2		%		80-120	17-JUL-19
Lithium (Li)-Dissolved			98.6		%		80-120	17-JUL-19
Magnesium (Mg)-Dissolved			100.8		%		80-120	17-JUL-19
Manganese (Mn)-Dissolved			104.7		%		80-120	17-JUL-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	17-JUL-19
Nickel (Ni)-Dissolved			98.8		%		80-120	17-JUL-19
Potassium (K)-Dissolved			104.7		%		80-120	17-JUL-19
Selenium (Se)-Dissolved			105.9		%		80-120	17-JUL-19
Silicon (Si)-Dissolved			103.3		%		60-140	17-JUL-19
Silver (Ag)-Dissolved			97.2		%		80-120	17-JUL-19
Sodium (Na)-Dissolved			105.2		%		80-120	17-JUL-19
Strontium (Sr)-Dissolved			98.6		%		80-120	17-JUL-19
Thallium (Tl)-Dissolved			98.0		%		80-120	17-JUL-19
Tin (Sn)-Dissolved			98.7		%		80-120	17-JUL-19
Titanium (Ti)-Dissolved			100.4		%		80-120	17-JUL-19
Uranium (U)-Dissolved			102.6		%		80-120	17-JUL-19
Vanadium (V)-Dissolved			101.7		%		80-120	17-JUL-19
Zinc (Zn)-Dissolved			100.8		%		80-120	17-JUL-19
<b>WG3106964-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUL-19



## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4714060</b>							
<b>WG3106964-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713071</b>							
<b>WG3105806-14</b>	<b>LCS</b>							
Ammonia as N			99.9		%		85-115	15-JUL-19
<b>WG3105806-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	15-JUL-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712407</b>							
<b>WG3106206-2</b>	<b>LCS</b>							
Nitrite (as N)			102.5		%		90-110	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-JUL-19



## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4712407							
<b>WG3106206-2</b>	<b>LCS</b>							
Nitrate (as N)			99.9		%		90-110	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-JUL-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4715588							
<b>WG3109342-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	18-JUL-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4717996							
<b>WG3110377-7</b>	<b>DUP</b>	<b>L2309604-4</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	19-JUL-19
<b>WG3110377-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.6		%		80-120	19-JUL-19
<b>WG3110377-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-JUL-19
<b>WG3110377-8</b>	<b>MS</b>	<b>L2309604-4</b>						
Phosphorus (P)-Total			116.2		%		70-130	19-JUL-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4717996							
<b>WG3110377-7</b>	<b>DUP</b>	<b>L2309604-4</b>						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	19-JUL-19
<b>WG3110377-6</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			114.6		%		80-120	19-JUL-19
<b>WG3110377-5</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-JUL-19
<b>WG3110377-8</b>	<b>MS</b>	<b>L2309604-4</b>						
Phosphorus (P)-Total Dissolved			75.9		%		70-130	19-JUL-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4719769							
<b>WG3111554-8</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	19-JUL-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4711851</b>							
<b>WG3105316-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	15-JUL-19
<b>WG3105316-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-JUL-19
<b>WG3105316-9</b>	<b>MS</b>	<b>L2309604-3</b>						
Orthophosphate-Dissolved (as P)			89.8		%		70-130	15-JUL-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4712407</b>							
<b>WG3106206-2</b>	<b>LCS</b>							
Sulfate (SO4)			97.4		%		90-110	15-JUL-19
<b>WG3106206-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	15-JUL-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4717650</b>							
<b>WG3108577-5</b>	<b>LCS</b>							
Total Dissolved Solids			95.2		%		85-115	18-JUL-19
<b>WG3108577-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	18-JUL-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4719948</b>							
<b>WG3111819-13</b>	<b>DUP</b>	<b>L2309604-3</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	24-JUL-19
<b>WG3111819-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.4		%		75-125	22-JUL-19
<b>WG3111819-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	22-JUL-19
<b>WG3111819-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.4		%		75-125	22-JUL-19
<b>WG3111819-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			108.6		%		75-125	22-JUL-19
<b>WG3111819-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	22-JUL-19
<b>WG3111819-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			108.5		%		75-125	22-JUL-19
<b>WG3111819-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.2		%		75-125	22-JUL-19
<b>WG3111819-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19



## Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4719948</b>							
<b>WG3111819-11 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-3 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4718992</b>							
<b>WG3108924-4 LCS</b>								
Total Suspended Solids			92.8		%		85-115	19-JUL-19
<b>WG3108924-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	19-JUL-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4712335</b>							
<b>WG3105756-3 DUP</b>		<b>L2309604-4</b>						
Turbidity		2.29	2.24		NTU	2.2	15	15-JUL-19
<b>WG3105756-2 LCS</b>								
Turbidity			95.0		%		85-115	15-JUL-19
<b>WG3105756-1 MB</b>								
Turbidity			<0.10		NTU		0.1	15-JUL-19

# Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2309604

Report Date: 24-JUL-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	12-JUL-19 14:25	18-JUL-19 10:00	0.25	140	hours	EHTR-FM
	2	12-JUL-19 14:30	18-JUL-19 10:00	0.25	139	hours	EHTR-FM
	3	12-JUL-19 14:35	18-JUL-19 10:00	0.25	139	hours	EHTR-FM
	4	12-JUL-19 14:20	18-JUL-19 10:00	0.25	140	hours	EHTR-FM
pH	1	12-JUL-19 14:25	19-JUL-19 14:00	0.25	168	hours	EHTR-FM
	2	12-JUL-19 14:30	19-JUL-19 14:00	0.25	168	hours	EHTR-FM
	3	12-JUL-19 14:35	19-JUL-19 14:00	0.25	168	hours	EHTR-FM
	4	12-JUL-19 14:20	19-JUL-19 14:00	0.25	168	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2309604 were received on 13-JUL-19 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# Teck

COC ID: 2019071203GW

TURKAROUND TIME:

LABORATORY:

OTHER INFO:

RUSH:

PROJECT/CLIENT INFO  
 Facility Name / Job# Elview Operations  
 Job Description Q3 Ground Water Sampling  
 Project Manager Cameron Griffin  
 Email cameron.griffin@teck.com  
 Address RR#1 HWY#3

LAB NAME ALS Calgary  
 Lab Contact Lyndie Shew  
 Email lyndie.shew@alsglobal.com  
 Address 5359 29 St NE

Report Form / Distribution  
 Email 1: teckcoal@teck.com  
 Email 2: teckcoal@teck.com  
 Email 3: kimberly.hardick@teck.com  
 Email 4: cameron.griffin@teck.com  
 Email 5: tecklab@teck.com

PO # YF000610852

City: Greenwood  
 Postal Code: VIC 4C3

Province: BC  
 Country: Canada

City: Calgary  
 Postal Code: T1Y 7B5

Province: AB  
 Country: Canada

Phone Number: 1-250-465-5289

Phone Number: 1-403-291-9897

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED		DATE/TIME		DATE/TIME	
								TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus
EV_EC8gw_WG_2019_Q3_NP	EV_EC8gw	WG	N	7/12/2019	14:35	G	5			July 12, 2019			
EV_EC8gw_WG_2019_Q3_NP	EV_EC8gw	WG	N	7/12/2019	14:30	G	5						
EV_EC8gw_WG_2019_Q3_NP	EV_EC8gw	WG	N	7/12/2019	14:35	G	5						
EV_EC8gw_WG_2019_Q3_NP	EV_EC8gw	WG	N	7/12/2019	14:30	G	5						
Total							20						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS  
 Ultra trace Mercury samples are unfiltered and unpreserved  
 Total Mercury samples are preserved but unfiltered  
 Total Selenium samples are preserved but unfiltered  
 Dissolved Selenium samples are preserved and filtered

RELEASING BY/VALIDATION  
 Kimberley Hardick

ACCEPTED BY/VALIDATION  
 [Signature]

DATE/TIME  
 July 12, 2019  
 07/13 9:41B  
 TD

NB OF BOTTLES RETURNED/DESCRIPTION  
 Regular (default) X  
 Priority (2-3 business days) - 50% surcharge  
 Emergencies (1 Business Day) - 100% surcharge  
 For Emergencies < 1 Day ASAP on Weekend - Contact ALS

Sampler's Name  
 Kimberley Hardick

Sampler's Signature  
 [Signature]

Mobile #

Date/Time  
 July 12, 2019

Barcode  
 L2309604-COFC



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 16-JUL-19  
Report Date: 26-JUL-19 16:28 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2310744  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190715Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310744-1	L2310744-2	L2310744-3	L2310744-4	L2310744-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	15-JUL-19	15-JUL-19	15-JUL-19	15-JUL-19	15-JUL-19
		Sampled Time	15:10	15:15	15:20	15:25	13:10
		Client ID	EV_OCGW_WG_2 019_Q3_NP	EV_MC5GW_WG_ 2019_Q3_NP	EV_MC6GW_WG_ 2019_Q3_NP	EV_MC7GW_WG_ 2019_Q3_NP	EV_ER1GWS_WG_ _2019_Q3_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	464	470	<2.0	14.7 <sup>RRV</sup>	442	
	Hardness (as CaCO3) (mg/L)	155	158	<0.50	<0.50	226	
	pH (pH)	8.25	8.26	5.39	4.52	8.15	
	ORP (mV)	332	298	516	484	436	
	Total Suspended Solids (mg/L)	4.7	5.3	<1.0	<1.0	1.1	
	Total Dissolved Solids (mg/L)	256 <sup>DLHC</sup>	256 <sup>DLHC</sup>	<10	<10	248 <sup>DLHC</sup>	
	Turbidity (NTU)	2.98	3.63	0.19 <sup>RRV</sup>	0.16 <sup>RRV</sup>	0.17	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	1.8	3.1 <sup>RRV</sup>	1.2	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	190	190	<1.0	<1.0	172	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	190	190	<1.0	<1.0	172	
	Ammonia as N (mg/L)	0.0694	0.0666	<0.0050	<0.0050	<0.0050	
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	
	Chloride (Cl) (mg/L)	1.96	1.94	<0.50	<0.50	6.94	
	Fluoride (F) (mg/L)	1.08	1.05	<0.020	<0.020	0.172	
	Ion Balance (%)	102	103	0.0	44.3 <sup>RRV</sup>	99.4	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	1.23	
	Nitrite (as N) (mg/L)	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	0.112	0.088	<0.050	<0.050	0.173	
	Total Nitrogen (mg/L)	0.112	0.089	<0.050	<0.050	1.40	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0082	0.0079	<0.0010	<0.0010	0.0023	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0106	0.0136	<0.0020	<0.0020	<0.0020	
	Phosphorus (P)-Total (mg/L)	0.0149	0.0151	<0.0020	<0.0020	<0.0020	
	Sulfate (SO4) (mg/L)	61.1	61.3	<0.30	3.28 <sup>RRV</sup>	51.9	
	Anion Sum (meq/L)	5.17	5.17	<0.10	<0.10	4.80	
	Cation Sum (meq/L)	5.26	5.31	<0.10	<0.10	4.78	
Cation - Anion Balance (%)	0.8	1.3	0.0	-38.6	-0.3		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00175	0.00177	<0.00010	<0.00010	0.00012	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2310744-6 WG 15-JUL-19 12:35 EV_ER1GWD_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	460			
	Hardness (as CaCO3) (mg/L)	252			
	pH (pH)	8.15			
	ORP (mV)	354			
	Total Suspended Solids (mg/L)	4.7			
	Total Dissolved Solids (mg/L)	240	DLHC		
	Turbidity (NTU)	1.56			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.1			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	228			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	228			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	6.53			
	Fluoride (F) (mg/L)	0.208			
	Ion Balance (%)	98.7			
	Nitrate (as N) (mg/L)	0.394			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.204			
	Total Nitrogen (mg/L)	0.598			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0039	RRV		
	Phosphorus (P)-Total (mg/L)	<0.0020	RRV		
	Sulfate (SO4) (mg/L)	22.6			
	Anion Sum (meq/L)	5.26			
	Cation Sum (meq/L)	5.19			
	Cation - Anion Balance (%)	-0.7			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	1.27			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0063			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2310744-1	L2310744-2	L2310744-3	L2310744-4	L2310744-5
		Description	WG	WG	WG	WG	WG
		Sampled Date	15-JUL-19	15-JUL-19	15-JUL-19	15-JUL-19	15-JUL-19
		Sampled Time	15:10	15:15	15:20	15:25	13:10
		Client ID	EV_OCGW_WG_2 019_Q3_NP	EV_MC5GW_WG_ 2019_Q3_NP	EV_MC6GW_WG_ 2019_Q3_NP	EV_MC7GW_WG_ 2019_Q3_NP	EV_ER1GWS_WG_ _2019_Q3_NP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.0601	0.0576	<0.00010	<0.00010	0.0980
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.122	0.129	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.010 <sup>DLM</sup>
	Calcium (Ca)-Dissolved (mg/L)		29.0	30.1	<0.050	<0.050	62.3
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	0.00021
	Cobalt (Co)-Dissolved (ug/L)		0.29	0.28	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.326	0.316	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0236	0.0252	<0.0010	<0.0010	0.0067
	Magnesium (Mg)-Dissolved (mg/L)		20.1	20.1	<0.10	<0.10	17.2
	Manganese (Mn)-Dissolved (mg/L)		0.122	0.119	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)						<0.000050
	Mercury (Hg)-Dissolved (ug/L)		<0.00050	<0.00050	<0.00050	<0.00050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.0144	0.0153	<0.000050	<0.000050	0.00101
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		1.64	1.64	<0.050	<0.050	0.783
	Selenium (Se)-Dissolved (ug/L)		0.091	0.061	<0.050	<0.050	6.43
	Silicon (Si)-Dissolved (mg/L)		4.54	4.76	<0.050	<0.050	2.54
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		48.0	48.0	<0.050	<0.050	5.36
	Strontium (Sr)-Dissolved (mg/L)		0.386	0.409	<0.00020	<0.00020	0.164
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00115	0.00120	<0.000010	<0.000010	0.000835
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<b>Hydrocarbons</b>	EPH10-19 (mg/L)		<0.25	<0.25	<0.25	<0.25	
	EPH (C10-C32) (mg/L)		<0.50	<0.50	<0.50	<0.50	
	EPH19-32 (mg/L)		<0.25	<0.25	<0.25	<0.25	
	TEH (C10-C30) (mg/L)		<0.25	<0.25	<0.25	<0.25	
	Surrogate: 2-Bromobenzotrifluoride (%)		96.4	95.3	107.7	97.0	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2310744-6 WG 15-JUL-19 12:35 EV_ER1GWD_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0918			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	67.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00061			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0067			
	Magnesium (Mg)-Dissolved (mg/L)	20.4			
	Manganese (Mn)-Dissolved (mg/L)	0.0207			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00166			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.683			
	Selenium (Se)-Dissolved (ug/L)	1.29			
	Silicon (Si)-Dissolved (mg/L)	3.85			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.12			
	Strontium (Sr)-Dissolved (mg/L)	0.197			
	Thallium (Tl)-Dissolved (mg/L)	0.000011			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00141			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			
<b>Hydrocarbons</b>	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2310744-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**EPH(10-32)-CALC-CL** Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.



## Reference Information

<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TEH-BC-VA-CL</b>	Water	EPH (C10-C19) & EPH (C19-C32)	BCMOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
<b>TEH-WATER-VA-CL</b>	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190715Q3GW

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 1 of 11

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4723855							
<b>WG3113907-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.3		%		85-115	23-JUL-19
<b>WG3113907-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	23-JUL-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4723837							
<b>WG3113843-6</b>	<b>DUP</b>	<b>L2310744-4</b>						
Alkalinity, Total (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	23-JUL-19
<b>WG3113843-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	23-JUL-19
<b>WG3113843-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-JUL-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4714100							
<b>WG3108033-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.4		%		80-120	17-JUL-19
<b>WG3108033-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-JUL-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4713454							
<b>WG3107456-10</b>	<b>LCS</b>							
Bromide (Br)			110.6		%		85-115	16-JUL-19
<b>WG3107456-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	16-JUL-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4719035							
<b>WG3110782-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.8		%		80-120	19-JUL-19
<b>WG3110782-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	19-JUL-19
Batch	R4719810							
<b>WG3111687-3</b>	<b>DUP</b>	<b>L2310744-5</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-JUL-19
<b>WG3111687-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.4		%		80-120	20-JUL-19
<b>WG3111687-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-JUL-19
<b>WG3111687-4</b>		<b>L2310744-6</b>						



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4719810							
WG3111687-4	MS	L2310744-6						
Dissolved Organic Carbon			86.3		%		70-130	20-JUL-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4719035							
WG3110782-2	LCS							
Total Organic Carbon			106.6		%		80-120	19-JUL-19
WG3110782-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	19-JUL-19
Batch	R4719810							
WG3111687-3	DUP	L2310744-5						
Total Organic Carbon			<0.50	RPD-NA	mg/L	N/A	20	20-JUL-19
WG3111687-2	LCS							
Total Organic Carbon			106.5		%		80-120	20-JUL-19
WG3111687-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	20-JUL-19
WG3111687-4	MS	L2310744-6						
Total Organic Carbon			88.7		%		70-130	20-JUL-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4713454							
WG3107456-10	LCS							
Chloride (Cl)			97.9		%		90-110	16-JUL-19
WG3107456-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	16-JUL-19
<b>COLOUR-TRUE-CL</b> <b>Water</b>								
Batch	R4712942							
WG3106376-2	LCS							
Colour, True			101.3		%		85-115	16-JUL-19
WG3106376-1	MB							
Colour, True			<5.0		CU		5	16-JUL-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4723837							
WG3113843-6	DUP	L2310744-4						
Conductivity (@ 25C)			14.7		uS/cm	6.8	10	23-JUL-19
WG3113843-5	LCS							
Conductivity (@ 25C)			102.3		%		90-110	23-JUL-19
WG3113843-4	MB							



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4723837							
WG3113843-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-JUL-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4713454							
WG3107456-10	LCS							
Fluoride (F)			93.6		%		90-110	16-JUL-19
WG3107456-9	MB							
Fluoride (F)			<0.020		mg/L		0.02	16-JUL-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4714329							
WG3108678-2	LCS							
Mercury (Hg)-Dissolved			99.4		%		80-120	18-JUL-19
WG3108678-1	MB							
Mercury (Hg)-Dissolved			<0.000050		mg/L		0.000005	18-JUL-19
<b>HG-D-U-CVAF-VA</b>								
<b>Water</b>								
Batch	R4721368							
WG3112885-3	DUP	L2310744-2						
Mercury (Hg)-Dissolved		<0.00050	<0.00050	RPD-NA	ug/L	N/A	20	23-JUL-19
WG3112885-2	LCS							
Mercury (Hg)-Dissolved			90.0		%		80-120	23-JUL-19
WG3112885-1	MB	LF						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	23-JUL-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch	R4714100							
WG3108033-2	LCS							
Aluminum (Al)-Dissolved			100.9		%		80-120	17-JUL-19
Antimony (Sb)-Dissolved			102.7		%		80-120	17-JUL-19
Arsenic (As)-Dissolved			98.5		%		80-120	17-JUL-19
Barium (Ba)-Dissolved			94.5		%		80-120	17-JUL-19
Bismuth (Bi)-Dissolved			101.6		%		80-120	17-JUL-19
Boron (B)-Dissolved			104.6		%		80-120	17-JUL-19
Cadmium (Cd)-Dissolved			99.4		%		80-120	17-JUL-19
Calcium (Ca)-Dissolved			102.0		%		80-120	17-JUL-19
Chromium (Cr)-Dissolved			98.5		%		80-120	17-JUL-19
Cobalt (Co)-Dissolved			98.7		%		80-120	17-JUL-19



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4714100</b>							
<b>WG3108033-2</b>	<b>LCS</b>							
Copper (Cu)-Dissolved			96.4		%		80-120	17-JUL-19
Iron (Fe)-Dissolved			92.3		%		80-120	17-JUL-19
Lead (Pb)-Dissolved			99.7		%		80-120	17-JUL-19
Lithium (Li)-Dissolved			97.9		%		80-120	17-JUL-19
Magnesium (Mg)-Dissolved			100.2		%		80-120	17-JUL-19
Manganese (Mn)-Dissolved			97.4		%		80-120	17-JUL-19
Molybdenum (Mo)-Dissolved			105.3		%		80-120	17-JUL-19
Nickel (Ni)-Dissolved			95.8		%		80-120	17-JUL-19
Potassium (K)-Dissolved			98.4		%		80-120	17-JUL-19
Selenium (Se)-Dissolved			99.4		%		80-120	17-JUL-19
Silicon (Si)-Dissolved			107.2		%		60-140	17-JUL-19
Silver (Ag)-Dissolved			106.4		%		80-120	17-JUL-19
Sodium (Na)-Dissolved			103.3		%		80-120	17-JUL-19
Strontium (Sr)-Dissolved			98.0		%		80-120	17-JUL-19
Thallium (Tl)-Dissolved			100.8		%		80-120	17-JUL-19
Tin (Sn)-Dissolved			98.0		%		80-120	17-JUL-19
Titanium (Ti)-Dissolved			96.5		%		80-120	17-JUL-19
Uranium (U)-Dissolved			97.9		%		80-120	17-JUL-19
Vanadium (V)-Dissolved			99.7		%		80-120	17-JUL-19
Zinc (Zn)-Dissolved			102.3		%		80-120	17-JUL-19
<b>WG3108033-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-JUL-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-JUL-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-JUL-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-JUL-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4714100</b>							
<b>WG3108033-1</b>	<b>MB</b>	<b>NP</b>						
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-JUL-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-JUL-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-JUL-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-JUL-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-JUL-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-JUL-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-JUL-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-JUL-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-JUL-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4720301</b>							
<b>WG3111838-2</b>	<b>LCS</b>							
Ammonia as N			105.9		%		85-115	19-JUL-19
<b>WG3111838-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-JUL-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713454</b>							
<b>WG3107456-10</b>	<b>LCS</b>							
Nitrite (as N)			103.7		%		90-110	16-JUL-19
<b>WG3107456-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	16-JUL-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4713454</b>							
<b>WG3107456-10</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	16-JUL-19
<b>WG3107456-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	16-JUL-19



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4719003							
WG3110555-1	CRM	CL-ORP						
ORP			227		mV		210-230	19-JUL-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4717996							
WG3110377-30	LCS							
Phosphorus (P)-Total			101.7		%		80-120	19-JUL-19
WG3110377-29	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	19-JUL-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4717996							
WG3110377-30	LCS							
Phosphorus (P)-Total Dissolved			101.7		%		80-120	19-JUL-19
WG3110377-29	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	19-JUL-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4723837							
WG3113843-6	DUP	L2310744-4						
pH		4.52	4.51	J	pH	0.01	0.2	23-JUL-19
WG3113843-5	LCS							
pH			7.03		pH		6.9-7.1	23-JUL-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4713899							
WG3106630-11	LCS							
Orthophosphate-Dissolved (as P)			98.0		%		80-120	16-JUL-19
WG3106630-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	16-JUL-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4713454							
WG3107456-10	LCS							
Sulfate (SO4)			98.8		%		90-110	16-JUL-19
WG3107456-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	16-JUL-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4719060							
<b>WG3110470-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.2		%		85-115	19-JUL-19
<b>WG3110470-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	19-JUL-19
<b>TEH-BC-VA-CL</b>		<b>Water</b>						
Batch	R4714615							
<b>WG3108827-14</b>	<b>LCS</b>							
EPH10-19			94.3		%		70-130	20-JUL-19
EPH19-32			96.1		%		70-130	20-JUL-19
<b>WG3108827-2</b>	<b>LCS</b>							
EPH10-19			92.1		%		70-130	18-JUL-19
EPH19-32			90.8		%		70-130	18-JUL-19
<b>WG3108827-6</b>	<b>LCS</b>							
EPH10-19			90.4		%		70-130	19-JUL-19
EPH19-32			85.3		%		70-130	19-JUL-19
<b>WG3108827-1</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	18-JUL-19
EPH19-32			<0.25		mg/L		0.25	18-JUL-19
Surrogate: 2-Bromobenzotrifluoride			86.2		%		60-140	18-JUL-19
<b>WG3108827-13</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	20-JUL-19
EPH19-32			<0.25		mg/L		0.25	20-JUL-19
Surrogate: 2-Bromobenzotrifluoride			72.7		%		60-140	20-JUL-19
<b>WG3108827-5</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	19-JUL-19
EPH19-32			<0.25		mg/L		0.25	19-JUL-19
Surrogate: 2-Bromobenzotrifluoride			94.6		%		60-140	19-JUL-19
<b>TEH-WATER-VA-CL</b>		<b>Water</b>						
Batch	R4714615							
<b>WG3108827-14</b>	<b>LCS</b>							
TEH (C10-C30)			94.7		%		70-130	20-JUL-19
<b>WG3108827-2</b>	<b>LCS</b>							
TEH (C10-C30)			91.7		%		70-130	18-JUL-19
<b>WG3108827-6</b>	<b>LCS</b>							
TEH (C10-C30)			88.7		%		70-130	19-JUL-19
<b>WG3108827-1</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	18-JUL-19



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TEH-WATER-VA-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4714615</b>							
<b>WG3108827-1</b>	<b>MB</b>							
Surrogate: 2-Bromobenzotrifluoride			86.2		%		60-140	18-JUL-19
<b>WG3108827-13</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	20-JUL-19
Surrogate: 2-Bromobenzotrifluoride			72.7		%		60-140	20-JUL-19
<b>WG3108827-5</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	19-JUL-19
Surrogate: 2-Bromobenzotrifluoride			94.6		%		60-140	19-JUL-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4719948</b>							
<b>WG3111819-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.4		%		75-125	22-JUL-19
<b>WG3111819-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	22-JUL-19
<b>WG3111819-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.4		%		75-125	22-JUL-19
<b>WG3111819-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			108.6		%		75-125	22-JUL-19
<b>WG3111819-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.3		%		75-125	22-JUL-19
<b>WG3111819-4</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			108.5		%		75-125	22-JUL-19
<b>WG3111819-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.2		%		75-125	22-JUL-19
<b>WG3111819-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-11</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19
<b>WG3111819-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-JUL-19



## Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4721014							
<b>WG3109183-6</b>	<b>LCS</b>							
Total Suspended Solids			91.9		%		85-115	22-JUL-19
<b>WG3109183-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	22-JUL-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4713283							
<b>WG3107273-12</b>	<b>DUP</b>	<b>L2310744-1</b>						
Turbidity		2.98	2.89		NTU	3.1	15	16-JUL-19
<b>WG3107273-11</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	16-JUL-19
<b>WG3107273-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	16-JUL-19

# Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2310744

Report Date: 26-JUL-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	15-JUL-19 15:10	19-JUL-19 11:31	0.25	92	hours	EHTR-FM
	2	15-JUL-19 15:15	19-JUL-19 11:31	0.25	92	hours	EHTR-FM
	3	15-JUL-19 15:20	19-JUL-19 11:31	0.25	92	hours	EHTR-FM
	4	15-JUL-19 15:25	19-JUL-19 11:31	0.25	92	hours	EHTR-FM
	5	15-JUL-19 13:10	19-JUL-19 11:31	0.25	94	hours	EHTR-FM
	6	15-JUL-19 12:35	19-JUL-19 11:31	0.25	95	hours	EHTR-FM
pH							
	1	15-JUL-19 15:10	23-JUL-19 09:00	0.25	186	hours	EHTR-FM
	2	15-JUL-19 15:15	23-JUL-19 09:00	0.25	186	hours	EHTR-FM
	3	15-JUL-19 15:20	23-JUL-19 09:00	0.25	186	hours	EHTR-FM
	4	15-JUL-19 15:25	23-JUL-19 09:00	0.25	186	hours	EHTR-FM
	5	15-JUL-19 13:10	23-JUL-19 09:00	0.25	188	hours	EHTR-FM
	6	15-JUL-19 12:35	23-JUL-19 09:00	0.25	188	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2310744 were received on 16-JUL-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

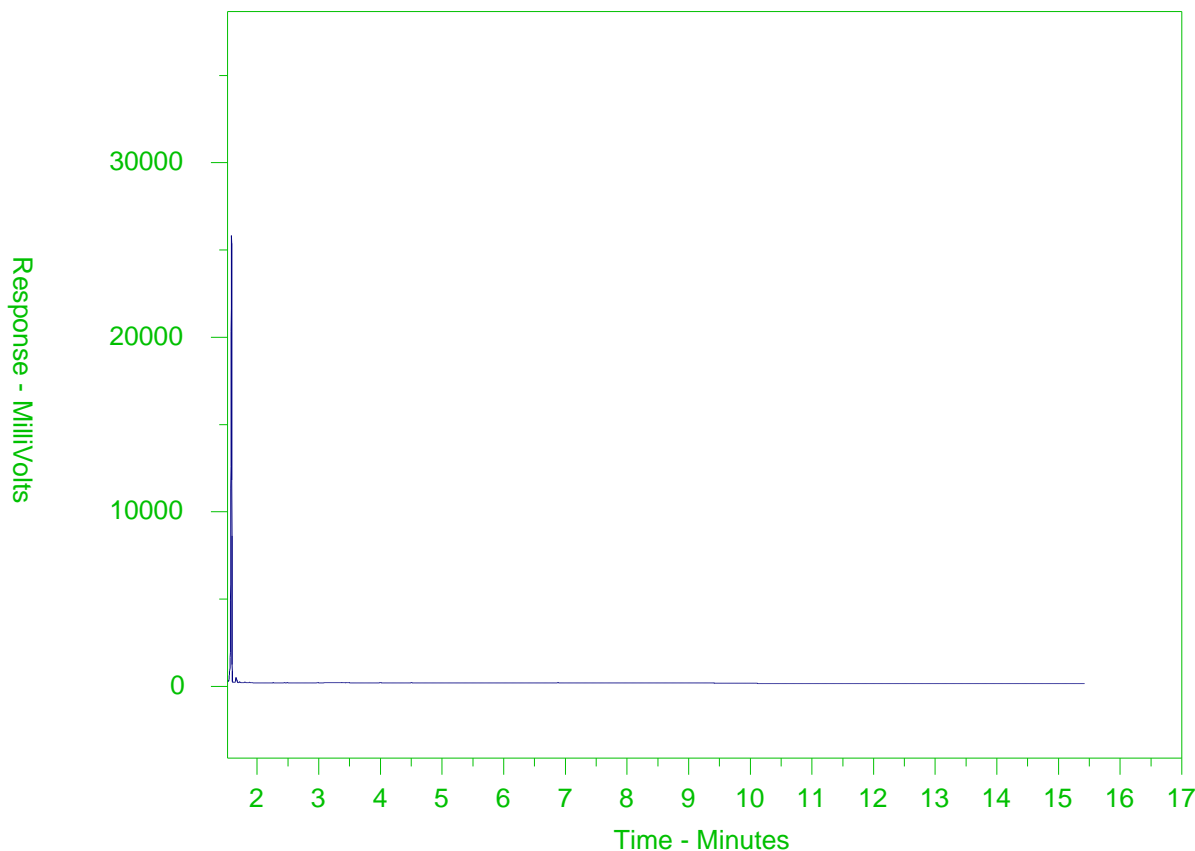
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2310744-1  
 Client Sample ID: EV\_OCGW\_WG\_2019\_Q3\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34	nC50	
174°C	287°C		481°C	575°C	
346°F	549°F		898°F	1067°F	
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

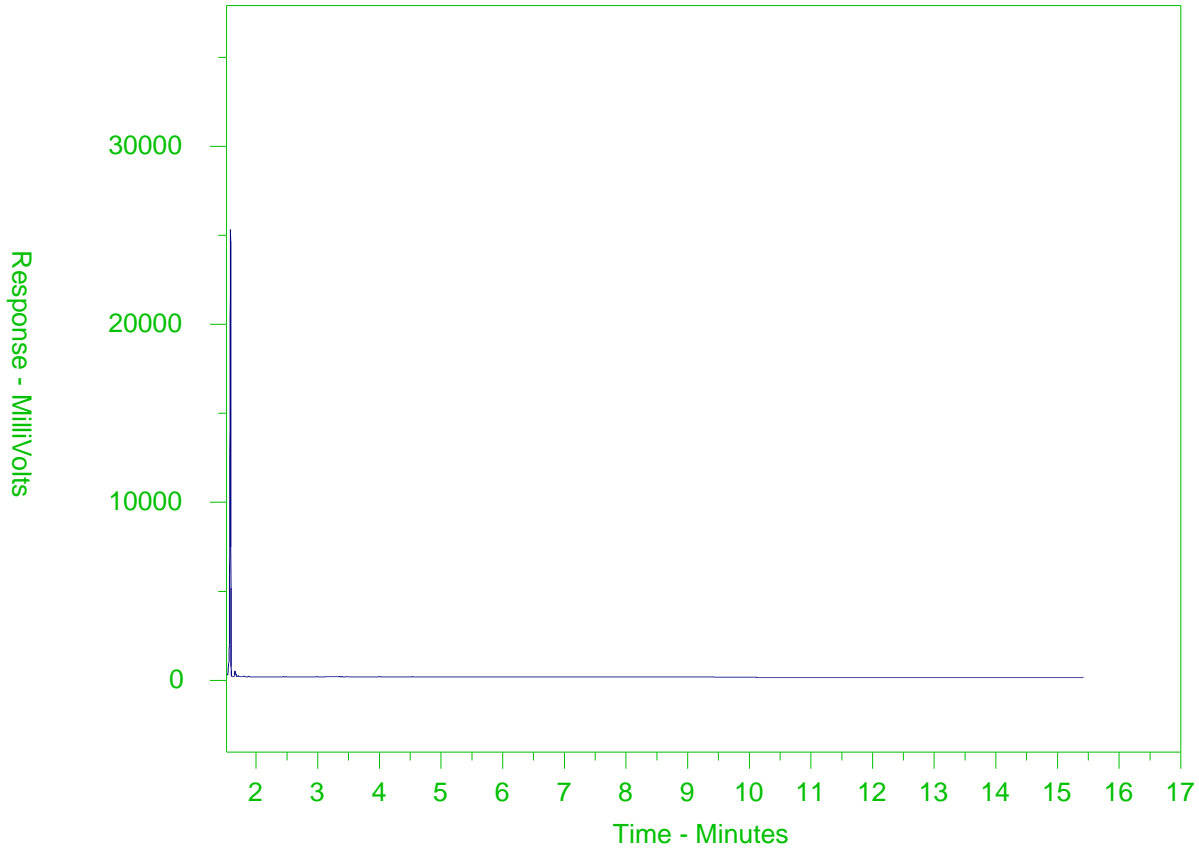
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2310744-2  
 Client Sample ID: EV\_MC5GW\_WG\_2019\_Q3\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

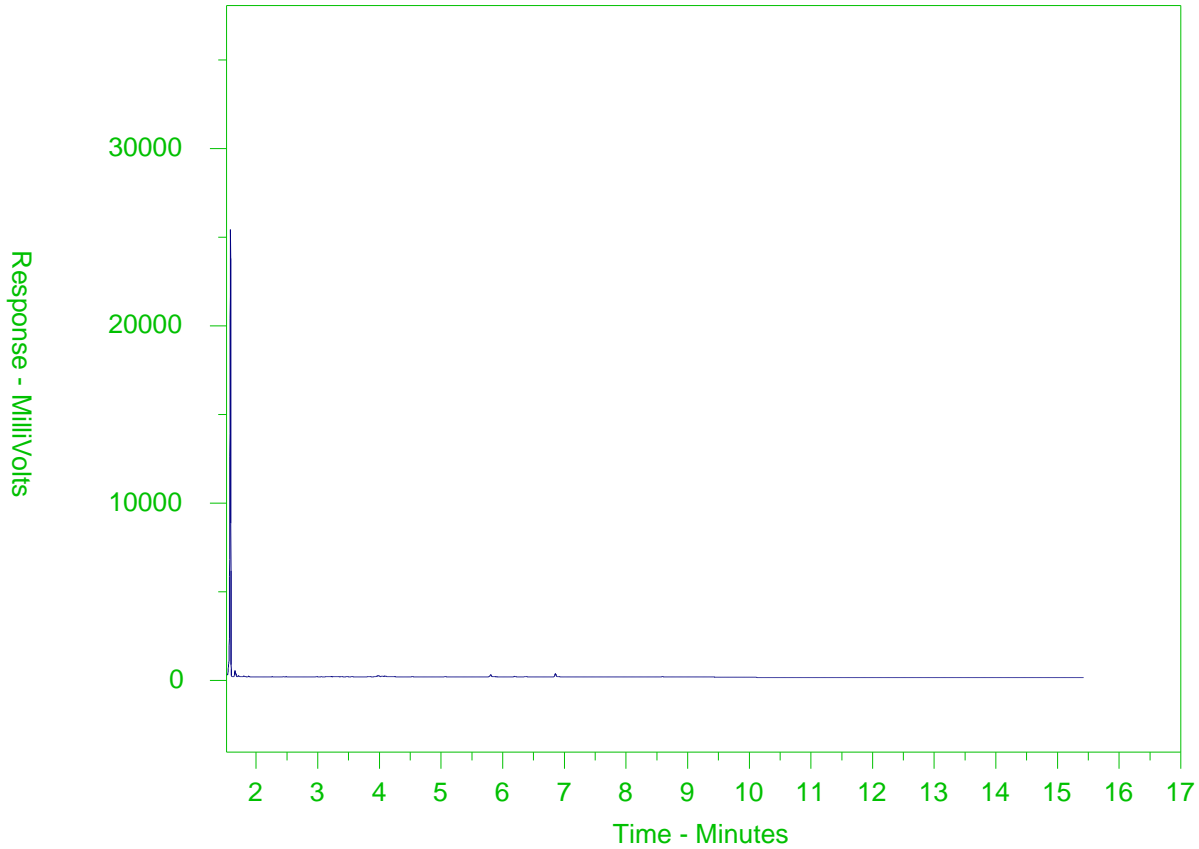
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2310744-3  
 Client Sample ID: EV\_MC6GW\_WG\_2019\_Q3\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

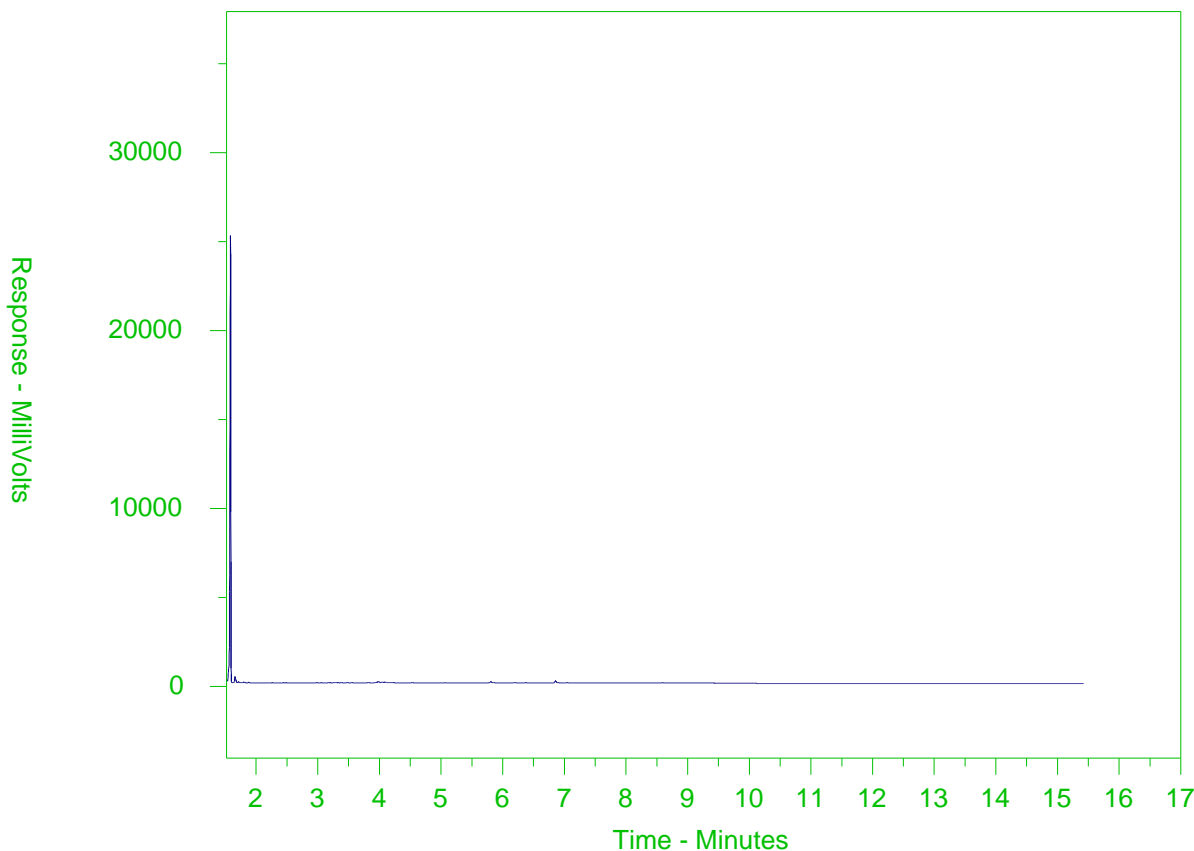
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).



# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2310744-4  
 Client Sample ID: EV\_MC7GW\_WG\_2019\_Q3\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34	nC50		
174°C	287°C	481°C	575°C		
346°F	549°F	898°F	1067°F		
← Gasoline →			← Motor Oils/ Lube Oils/ Grease →		
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

# Teck

COC ID: 20190715Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO						
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution			Excel	PDF	EDD	
Job Description	Q2 Ground Water Sampling			Lab Contact	Lyudmila Shvets			Email 1:	bryan.orden@teck.com		X	X	X	
Project Manager	Cameron Griffin			Email	Lyudmila.Shvets@ahglobal.com			Email 2:	teckcal@quintonline.com		X	X	X	
Email	Cameron.Griffin@teck.com			Address	2359 29 St NE			Email 3:	kimberly.hackett@teck.com		X	X	X	
Address	RR#1 HWY# 3							Email 4:	Cameron.Griffin@teck.com		X	X	X	
								Email 5:	Teck.Lab.Results@sharpoint.teck.com		X	X	X	
City	Sparwood		Province	BC		City	Calgary		Province	AB		PO #	VPO06610852	
Postal Code	VIC 4C3		Country	Canada		Postal Code	T1Y 7B5		Country	Canada				
Phone Number	1-250-865-5289			Phone Number	1 403 291 9897									

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G-Grab C-Comp	# Of Cont.	FILTERED PRESERVED	Filter: P, Vol: L, Lab: P, P, P, P, P, P, P, P, P, P, P, P											
									No	No	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
									TECKCOAL-ROUTINE-VA (EWS 1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORO)	Total Nitrogen for BC (NO2 and NO3)	F-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	
EV_OCgw_WG_2019_Q1_NP	EV_OCgw	WG	N	7/15/2019	15:10	G	7		1		1		1				1	2		
EV_MC5gw_WG_2019_Q3_NP	EV_MC5gw	WG	N	7/15/2019	15:15	G	7		1		1		1				1	2		
EV_MC6gw_WG_2019_Q3_NP	EV_MC6gw	WG	N	7/15/2019	15:20	G	7		1		1		1				1	2		
EV_MC7gw_WG_2019_Q3_NP	EV_MC7gw	WG	N	7/15/2019	15:25	G	7		1		1		1				1	2		
EV_ER1gwS_WG_2019_Q3_NP	EV_ER1gwS	WG	N	7/15/2019	13:10	G	5		1		1								1	
EV_ER1gwD_WG_2019_Q3_NP	EV_ER1gwD	WG	N	7/15/2019	12:35	G	5		1		1								1	
Total							38													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC6 - Not filtered EV_MC7 - Not filtered or preserved	Kimberly Hackett	July 15, 2019	DK	7/16/2019

NB OF BOTTLES RETURNED/DESCRIPTION	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberly Hackett		<i>Kimberly Hackett</i>	July 15, 2019



L2310744-COFC

*5°C*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 21-AUG-19  
Report Date: 02-SEP-19 09:08 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2333467  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190820Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2333467-1 WG 20-AUG-19 13:25 EV_MW_BC1- A_WG- 2019_NP_Q3_NP	L2333467-2 WG 20-AUG-19 12:20 EV_MW_BC1- B_WG_2019_NP_ Q3_NP	L2333467-3 WG 20-AUG-19 10:35 EV_MW_MC2- A_WG_2019_NP_ Q3_NP	L2333467-4 WG 20-AUG-19 10:45 EV_MW_MC2- B_WG_2019_NP_ NP	L2333467-5 WG 20-AUG-19 08:30 EV_MW_MC3_WG _2019_NP_Q3_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	1840	2010	856	1250	711
	Hardness (as CaCO3) (mg/L)	1140	1290	371	690	106
	pH (pH)	8.15	8.17	8.23	8.19	8.58
	ORP (mV)	291	359	284	352	262
	Total Suspended Solids (mg/L)	23.8	1.1	<1.0	<1.0	3.8
	Total Dissolved Solids (mg/L)	1550 <sup>DLHC</sup>	1800 <sup>DLHC</sup>	508 <sup>DLHC</sup>	940 <sup>DLHC</sup>	438 <sup>DLHC</sup>
	Turbidity (NTU)	23.3	0.31	9.45	0.13	3.81
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	13.8	16.8	12.2	12.6	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	260	271	384	248	335
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	21.2
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	260	271	384	248	356
	Ammonia as N (mg/L)	0.0084 <sup>DLHC</sup>	0.0199 <sup>DLHC</sup>	0.889 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	0.0383
	Bromide (Br) (mg/L)	3.00 <sup>DLHC</sup>	2.78 <sup>DLHC</sup>	<0.050	0.93 <sup>DLHC</sup>	0.063
	Chloride (Cl) (mg/L)	29.6 <sup>DLHC</sup>	28.5 <sup>DLHC</sup>	61.3	28.8 <sup>DLHC</sup>	6.99
	Fluoride (F) (mg/L)	0.20 <sup>DLHC</sup>	0.25 <sup>DLHC</sup>	0.331	0.13 <sup>DLHC</sup>	1.68
	Ion Balance (%)	91.3	92.7	101	95.1	98.6
	Nitrate (as N) (mg/L)	17.8 <sup>DLHC</sup>	20.0 <sup>DLHC</sup>	<0.0050 <sup>HTD</sup>	8.33 <sup>DLHC</sup>	0.124
	Nitrite (as N) (mg/L)	0.0060 <sup>DLHC</sup>	<0.0050 <sup>DLHC</sup>	<0.0010 <sup>HTD</sup>	<0.0050 <sup>DLHC</sup>	0.0841
	Total Kjeldahl Nitrogen (mg/L)	<0.25 <sup>TKNI</sup>	<0.25 <sup>TKNI</sup>	0.922	<0.25 <sup>TKNI</sup>	0.111
	Total Nitrogen (mg/L)	17.8	20.0	0.922	8.33	0.319
	Orthophosphate-Dissolved (as P) (mg/L)	0.0080	0.0232	<0.0010	0.0039	0.0015
	Phosphorus (P)-Total Dissolved (mg/L)	0.0108	0.0219	0.0023	0.0041	0.0143
	Phosphorus (P)-Total (mg/L)	0.074 <sup>DLM</sup>	0.027 <sup>DLM</sup>	0.0061 <sup>DLM</sup>	0.0050 <sup>DLM</sup>	0.038 <sup>DLM</sup>
	Sulfate (SO4) (mg/L)	882 <sup>DLHC</sup>	1010 <sup>DLHC</sup>	<0.30	419 <sup>DLHC</sup>	35.1
	Anion Sum (meq/L)	25.7	28.6	9.42	15.1	8.14
	Cation Sum (meq/L)	23.5	26.5	9.53	14.3	8.03
	Cation - Anion Balance (%)	-4.5	-3.8	0.5	-2.5	-0.7
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.19	0.68	<0.50	<0.50	1.40
	Total Organic Carbon (mg/L)	1.39	0.56	<0.50	<0.50	1.24
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0194	<0.0030	<0.0030	<0.0030	0.0095
	Antimony (Sb)-Dissolved (mg/L)	0.00098	0.00165	<0.00010	0.00011	0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00029	0.00024	0.00071	0.00011	0.00129

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2333467-6	L2333467-7			
Description	WG	WG			
Sampled Date	20-AUG-19	20-AUG-19			
Sampled Time	08:35	08:40			
Client ID	EV_EC5GW_WG_2019-08_NP	EV_EC6GW_WG_2019-08_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0		
	Conductivity (@ 25C) (uS/cm)	601	<2.0		
	Hardness (as CaCO3) (mg/L)	99.8	<0.50		
	pH (pH)	8.33	5.35		
	ORP (mV)	278	366		
	Total Suspended Solids (mg/L)	3.1	<1.0		
	Total Dissolved Solids (mg/L)	412 <sup>DLHC</sup>	<10		
	Turbidity (NTU)	3.61	<0.10		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	346	<1.0		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	5.2	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	351	<1.0		
	Ammonia as N (mg/L)	0.0435	<0.0050		
	Bromide (Br) (mg/L)	0.071	<0.050		
	Chloride (Cl) (mg/L)	6.79	<0.50		
	Fluoride (F) (mg/L)	1.65	<0.020		
	Ion Balance (%)	99.2	0.0		
	Nitrate (as N) (mg/L)	0.115	<0.0050		
	Nitrite (as N) (mg/L)	0.0803	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.107	<0.050		
	Total Nitrogen (mg/L)	0.302	<0.050		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0179	<0.0010		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0163	<0.0020		
	Phosphorus (P)-Total (mg/L)	0.036 <sup>DLM</sup>	<0.0020		
	Sulfate (SO4) (mg/L)	33.8	<0.30		
	Anion Sum (meq/L)	8.02	<0.10		
	Cation Sum (meq/L)	7.96	<0.10		
	Cation - Anion Balance (%)	-0.4	0.0		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.22	<0.50		
	Total Organic Carbon (mg/L)	1.19	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	LAB		
	Dissolved Metals Filtration Location	FIELD	LAB		
	Aluminum (Al)-Dissolved (mg/L)	0.0037	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	0.00013	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00143	<0.00010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

02-SEP-19 09:08 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2333467-1	L2333467-2	L2333467-3	L2333467-4	L2333467-5
					WG	WG	WG	WG	WG
		20-AUG-19	13:25	EV_MW_BC1-A_WG-2019_NP_Q3_NP	20-AUG-19	12:20	20-AUG-19	10:35	20-AUG-19
						EV_MW_BC1-B_WG_2019_NP_Q3_NP	EV_MW_MC2-A_WG_2019_NP_Q3_NP	EV_MW_MC2-B_WG_2019_NP_NP	20-AUG-19
									08:30
									EV_MW_MC3_WG_2019_NP_Q3_NP
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0524	0.0450	4.93	0.0571	0.265			
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.054	0.059	0.073	0.027	0.098			
	Cadmium (Cd)-Dissolved (ug/L)	0.183	0.329	<0.0050	0.114	<0.020 <sup>DLM</sup>			
	Calcium (Ca)-Dissolved (mg/L)	225	234	95.0	163	24.4			
	Chromium (Cr)-Dissolved (mg/L)	0.00015	0.00014	<0.00010	0.00014	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	2.13	0.31	<0.10	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.106	<0.010	0.937	<0.010	0.019			
	Lead (Pb)-Dissolved (mg/L)	0.000108	<0.000050	<0.000050	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.157	0.196	0.236	0.0518	0.123			
	Magnesium (Mg)-Dissolved (mg/L)	141	172	32.6	68.8	10.9			
	Manganese (Mn)-Dissolved (mg/L)	0.0448	0.00460	0.0519	<0.00010	0.0407			
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00623	0.00847	0.000364	0.000590	0.0234			
	Nickel (Ni)-Dissolved (mg/L)	0.00534	0.00471	<0.00050	0.00074	<0.00050			
	Potassium (K)-Dissolved (mg/L)	5.74	7.74	3.65	2.23	0.809			
	Selenium (Se)-Dissolved (ug/L)	146	179	<0.050	54.4	2.60			
	Silicon (Si)-Dissolved (mg/L)	3.48	3.44	3.92	3.45	2.75			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	9.99	10.5	43.7	11.4	135			
	Strontium (Sr)-Dissolved (mg/L)	0.838	0.872	1.38	0.353	0.172			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000048	<0.000010	0.000011	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00828	0.00878	0.000078	0.00164	0.000812			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0072	0.0070	0.0035	0.0013	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2333467-6 WG 20-AUG-19 08:35 EV_EC5GW_WG_ 2019-08_NP	L2333467-7 WG 20-AUG-19 08:40 EV_EC6GW_WG_ 2019-08_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.300	<0.00010		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.091	<0.010		
	Cadmium (Cd)-Dissolved (ug/L)	<0.020 <sup>DLM</sup>	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	23.3	<0.050		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10		
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050		
	Iron (Fe)-Dissolved (mg/L)	0.018	<0.010		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.125	<0.0010		
	Magnesium (Mg)-Dissolved (mg/L)	10.1	<0.10		
	Manganese (Mn)-Dissolved (mg/L)	0.0423	<0.00010		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0246	<0.000050		
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050		
	Potassium (K)-Dissolved (mg/L)	0.819	<0.050		
	Selenium (Se)-Dissolved (ug/L)	2.67	<0.050		
	Silicon (Si)-Dissolved (mg/L)	2.86	<0.050		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	136	<0.050		
	Strontium (Sr)-Dissolved (mg/L)	0.182	<0.00020		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000795	<0.000010		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2333467-7	EV_EC6GW_WG_2019-08_1	SFPL	Sample was Filtered and Preserved at the laboratory
L2333467-8	EV_EC7GW_WG_2019-08_1	NR:NR	No Result: Sample Not Received At Laboratory

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333467-1, -2, -3, -4, -5

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)



## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended			

## Reference Information

hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS  
 This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)  
 Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C  
 A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E  
 Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)  
 This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric  
 This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer  
 This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190820Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

< - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 1 of 16

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4767011							
WG3141376-11	LCS							
Acidity (as CaCO3)			102.2		%		85-115	22-AUG-19
WG3141376-10	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	22-AUG-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4766810							
WG3141381-17	LCS							
Alkalinity, Total (as CaCO3)			96.9		%		85-115	22-AUG-19
WG3141381-16	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-AUG-19
Batch	R4767327							
WG3141779-2	LCS							
Alkalinity, Total (as CaCO3)			102.6		%		85-115	23-AUG-19
WG3141779-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4769111							
WG3142803-2	LCS							
Beryllium (Be)-Dissolved			95.9		%		80-120	25-AUG-19
WG3142803-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-19
Batch	R4769129							
WG3142801-3	DUP	L2333467-6						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-AUG-19
WG3142801-2	LCS							
Beryllium (Be)-Dissolved			94.8		%		80-120	27-AUG-19
WG3142801-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-AUG-19
Batch	R4779668							
WG3149836-2	LCS							
Beryllium (Be)-Dissolved			97.5		%		80-120	01-SEP-19
WG3149836-1	MB	LF						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4767516							
WG3141969-3	DUP	L2333467-7						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-AUG-19
WG3141969-2	LCS							



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 2 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-2</b>	<b>LCS</b>							
Bromide (Br)			99.0		%		85-115	22-AUG-19
<b>WG3141969-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>WG3141969-4</b>	<b>MS</b>	<b>L2333467-7</b>						
Bromide (Br)			116.2		%		75-125	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-11</b>	<b>DUP</b>	<b>L2333467-2</b>						
Dissolved Organic Carbon		0.68	0.68		mg/L	0.1	20	25-AUG-19
<b>WG3143147-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.6		%		80-120	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			113.0		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-12</b>	<b>MS</b>	<b>L2333467-3</b>						
Dissolved Organic Carbon			91.0		%		70-130	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-11</b>	<b>DUP</b>	<b>L2333467-2</b>						
Total Organic Carbon		0.56	0.64		mg/L	13	20	25-AUG-19
<b>WG3143147-10</b>	<b>LCS</b>							
Total Organic Carbon			97.9		%		80-120	25-AUG-19
<b>WG3143147-2</b>	<b>LCS</b>							
Total Organic Carbon			109.4		%		80-120	25-AUG-19
<b>WG3143147-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143147-12</b>	<b>MS</b>	<b>L2333467-3</b>						
Total Organic Carbon			90.6		%		70-130	25-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 3 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-3</b>	<b>DUP</b>	<b>L2333467-7</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-2</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	22-AUG-19
<b>WG3141969-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>WG3141969-4</b>	<b>MS</b>	<b>L2333467-7</b>						
Chloride (Cl)			108.9		%		75-125	22-AUG-19
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4763530</b>							
<b>WG3140172-3</b>	<b>DUP</b>	<b>L2333467-6</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	22-AUG-19
<b>WG3140172-2</b>	<b>LCS</b>							
Colour, True			106.0		%		85-115	22-AUG-19
<b>WG3140172-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	22-AUG-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4766810</b>							
<b>WG3141381-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.9		%		90-110	22-AUG-19
<b>WG3141381-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	22-AUG-19
<b>Batch</b>	<b>R4767327</b>							
<b>WG3141779-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	23-AUG-19
<b>WG3141779-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-3</b>	<b>DUP</b>	<b>L2333467-7</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-2</b>	<b>LCS</b>							
Fluoride (F)			98.7		%		90-110	22-AUG-19
<b>WG3141969-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>WG3141969-4</b>	<b>MS</b>	<b>L2333467-7</b>						
Fluoride (F)			112.7		%		75-125	22-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 4 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769372</b>							
<b>WG3144539-7</b>	<b>DUP</b>	<b>L2333467-7</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	27-AUG-19
<b>WG3144348-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.8		%		80-120	27-AUG-19
<b>WG3144539-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.3		%		80-120	27-AUG-19
<b>WG3144348-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	27-AUG-19
<b>WG3144539-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	27-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.2		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.8		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.4		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			96.5		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			101.8		%		80-120	25-AUG-19
Boron (B)-Dissolved			101.0		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			99.1		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.0		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.9		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.6		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			97.0		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			102.5		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			98.3		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.6		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			96.6		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			96.0		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.7		%		80-120	25-AUG-19
Potassium (K)-Dissolved			95.8		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			97.8		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			98.0		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.6		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			98.9		%		80-120	25-AUG-19



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 5 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			96.4		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			102.1		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			97.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			87.7		%		80-120	25-AUG-19
Uranium (U)-Dissolved			102.1		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.7		%		80-120	25-AUG-19
<b>WG3142803-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 6 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>Batch</b>	<b>R4769129</b>							
<b>WG3142801-3</b>	<b>DUP</b>	<b>L2333467-6</b>						
Aluminum (Al)-Dissolved		0.0037	0.0038		mg/L	5.1	20	27-AUG-19
Antimony (Sb)-Dissolved		0.00013	0.00012		mg/L	13	20	27-AUG-19
Arsenic (As)-Dissolved		0.00143	0.00150		mg/L	4.6	20	27-AUG-19
Barium (Ba)-Dissolved		0.300	0.293		mg/L	2.2	20	27-AUG-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-AUG-19
Boron (B)-Dissolved		0.091	0.093		mg/L	2.2	20	27-AUG-19
Cadmium (Cd)-Dissolved		<0.000020	<0.000010	RPD-NA	mg/L	N/A	20	27-AUG-19
Calcium (Ca)-Dissolved		23.3	22.9		mg/L	1.7	20	27-AUG-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-AUG-19
Iron (Fe)-Dissolved		0.018	0.018		mg/L	1.2	20	27-AUG-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-AUG-19
Lithium (Li)-Dissolved		0.125	0.123		mg/L	1.6	20	27-AUG-19
Magnesium (Mg)-Dissolved		10.1	10.3		mg/L	2.1	20	27-AUG-19
Manganese (Mn)-Dissolved		0.0423	0.0428		mg/L	1.3	20	27-AUG-19
Molybdenum (Mo)-Dissolved		0.0246	0.0252		mg/L	2.2	20	27-AUG-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-AUG-19
Potassium (K)-Dissolved		0.819	0.826		mg/L	0.8	20	27-AUG-19
Selenium (Se)-Dissolved		0.00267	0.00261		mg/L	2.1	20	27-AUG-19
Silicon (Si)-Dissolved		2.86	2.82		mg/L	1.3	20	27-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-AUG-19
Sodium (Na)-Dissolved		136	142		mg/L	3.9	20	27-AUG-19
Strontium (Sr)-Dissolved		0.182	0.183		mg/L	0.8	20	27-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-AUG-19
Uranium (U)-Dissolved		0.000795	0.000797		mg/L	0.3	20	27-AUG-19





## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 7 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769129</b>							
<b>WG3142801-3</b>	<b>DUP</b>	<b>L2333467-6</b>						
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-AUG-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-AUG-19
<b>WG3142801-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.9		%		80-120	27-AUG-19
Antimony (Sb)-Dissolved			94.9		%		80-120	27-AUG-19
Arsenic (As)-Dissolved			109.4		%		80-120	27-AUG-19
Barium (Ba)-Dissolved			105.6		%		80-120	27-AUG-19
Bismuth (Bi)-Dissolved			114.3		%		80-120	27-AUG-19
Boron (B)-Dissolved			86.7		%		80-120	27-AUG-19
Cadmium (Cd)-Dissolved			104.3		%		80-120	27-AUG-19
Calcium (Ca)-Dissolved			93.4		%		80-120	27-AUG-19
Chromium (Cr)-Dissolved			106.2		%		80-120	27-AUG-19
Cobalt (Co)-Dissolved			108.1		%		80-120	27-AUG-19
Copper (Cu)-Dissolved			103.7		%		80-120	27-AUG-19
Iron (Fe)-Dissolved			93.9		%		80-120	27-AUG-19
Lead (Pb)-Dissolved			105.9		%		80-120	27-AUG-19
Lithium (Li)-Dissolved			91.9		%		80-120	27-AUG-19
Magnesium (Mg)-Dissolved			106.1		%		80-120	27-AUG-19
Manganese (Mn)-Dissolved			105.0		%		80-120	27-AUG-19
Molybdenum (Mo)-Dissolved			99.1		%		80-120	27-AUG-19
Nickel (Ni)-Dissolved			107.2		%		80-120	27-AUG-19
Potassium (K)-Dissolved			104.6		%		80-120	27-AUG-19
Selenium (Se)-Dissolved			101.5		%		80-120	27-AUG-19
Silicon (Si)-Dissolved			109.0		%		60-140	27-AUG-19
Silver (Ag)-Dissolved			95.8		%		80-120	27-AUG-19
Sodium (Na)-Dissolved			110.2		%		80-120	27-AUG-19
Strontium (Sr)-Dissolved			97.4		%		80-120	27-AUG-19
Thallium (Tl)-Dissolved			103.7		%		80-120	27-AUG-19
Tin (Sn)-Dissolved			97.4		%		80-120	27-AUG-19
Titanium (Ti)-Dissolved			103.3		%		80-120	27-AUG-19
Uranium (U)-Dissolved			111.8		%		80-120	27-AUG-19
Vanadium (V)-Dissolved			107.1		%		80-120	27-AUG-19
Zinc (Zn)-Dissolved			109.5		%		80-120	27-AUG-19
<b>WG3142801-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 8 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769129</b>							
<b>WG3142801-1</b>	<b>MB</b>	<b>NP</b>						
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
<b>Batch</b>	<b>R4779668</b>							
<b>WG3149836-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.9		%		80-120	01-SEP-19
Antimony (Sb)-Dissolved			96.0		%		80-120	01-SEP-19
Arsenic (As)-Dissolved			102.7		%		80-120	01-SEP-19



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 9 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4779668</b>							
<b>WG3149836-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			97.9		%		80-120	01-SEP-19
Bismuth (Bi)-Dissolved			96.2		%		80-120	01-SEP-19
Boron (B)-Dissolved			100.3		%		80-120	01-SEP-19
Cadmium (Cd)-Dissolved			101.6		%		80-120	01-SEP-19
Calcium (Ca)-Dissolved			99.3		%		80-120	01-SEP-19
Chromium (Cr)-Dissolved			100.8		%		80-120	01-SEP-19
Cobalt (Co)-Dissolved			100.2		%		80-120	01-SEP-19
Copper (Cu)-Dissolved			98.5		%		80-120	01-SEP-19
Iron (Fe)-Dissolved			105.1		%		80-120	01-SEP-19
Lead (Pb)-Dissolved			95.5		%		80-120	01-SEP-19
Lithium (Li)-Dissolved			96.9		%		80-120	01-SEP-19
Magnesium (Mg)-Dissolved			103.8		%		80-120	01-SEP-19
Manganese (Mn)-Dissolved			100.5		%		80-120	01-SEP-19
Molybdenum (Mo)-Dissolved			96.9		%		80-120	01-SEP-19
Nickel (Ni)-Dissolved			99.4		%		80-120	01-SEP-19
Potassium (K)-Dissolved			101.5		%		80-120	01-SEP-19
Selenium (Se)-Dissolved			111.4		%		80-120	01-SEP-19
Silicon (Si)-Dissolved			105.2		%		60-140	01-SEP-19
Silver (Ag)-Dissolved			91.7		%		80-120	01-SEP-19
Sodium (Na)-Dissolved			109.8		%		80-120	01-SEP-19
Strontium (Sr)-Dissolved			99.1		%		80-120	01-SEP-19
Thallium (Tl)-Dissolved			96.0		%		80-120	01-SEP-19
Tin (Sn)-Dissolved			95.9		%		80-120	01-SEP-19
Titanium (Ti)-Dissolved			93.7		%		80-120	01-SEP-19
Uranium (U)-Dissolved			100.5		%		80-120	01-SEP-19
Vanadium (V)-Dissolved			101.7		%		80-120	01-SEP-19
Zinc (Zn)-Dissolved			103.1		%		80-120	01-SEP-19
<b>WG3149836-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-19



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 10 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4779668</b>							
<b>WG3149836-1</b>	<b>MB</b>	<b>LF</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771632</b>							
<b>WG3144930-22</b>	<b>LCS</b>							
Ammonia as N			107.8		%		85-115	27-AUG-19
<b>WG3144930-26</b>	<b>LCS</b>							
Ammonia as N			104.4		%		85-115	27-AUG-19
<b>WG3144930-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>WG3144930-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 11 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-3</b>	<b>DUP</b>	<b>L2333467-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-2</b>	<b>LCS</b>							
Nitrite (as N)			102.5		%		90-110	22-AUG-19
<b>WG3141969-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3141969-4</b>	<b>MS</b>	<b>L2333467-7</b>						
Nitrite (as N)			113.9		%		75-125	22-AUG-19
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4767516</b>								
<b>WG3141969-3</b>	<b>DUP</b>	<b>L2333467-7</b>						
Nitrate (as N)		<0.0050	0.0056	RPD-NA	mg/L	N/A	20	22-AUG-19
<b>WG3141969-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	22-AUG-19
<b>WG3141969-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>WG3141969-4</b>	<b>MS</b>	<b>L2333467-7</b>						
Nitrate (as N)			110.2		%		75-125	22-AUG-19
<b>ORP-CL</b>								
<b>Batch R4769169</b>								
<b>WG3143970-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4767467</b>								
<b>WG3141919-12</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	23-AUG-19
<b>WG3141919-11</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>P-TD-L-COL-CL</b>								
<b>Batch R4769953</b>								
<b>WG3144853-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			98.6		%		80-120	27-AUG-19
<b>WG3144853-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	27-AUG-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 12 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4766810							
WG3141381-17	LCS							
pH			7.02		pH		6.9-7.1	22-AUG-19
Batch	R4767327							
WG3141779-2	LCS							
pH			7.03		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4765949							
WG3140634-19	LCS							
Orthophosphate-Dissolved (as P)			99.3		%		80-120	22-AUG-19
WG3140634-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4767516							
WG3141969-3	DUP		L2333467-7					
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	22-AUG-19
WG3141969-2	LCS							
Sulfate (SO4)			101.1		%		90-110	22-AUG-19
WG3141969-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
WG3141969-4	MS		L2333467-7					
Sulfate (SO4)			108.4		%		75-125	22-AUG-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4768912							
WG3143234-9	LCS							
Total Dissolved Solids			102.9		%		85-115	26-AUG-19
WG3143234-8	MB							
Total Dissolved Solids			<10		mg/L		10	26-AUG-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4778448							
WG3148809-10	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
WG3148809-13	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
WG3148809-16	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
WG3148809-2	LCS							



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 13 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-24</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-27</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
<b>WG3148809-31</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4768837</b>							
<b>WG3143202-10</b>	<b>LCS</b>							
Total Suspended Solids			94.7		%		85-115	26-AUG-19
<b>WG3143202-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 14 of 16

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4765274</b>							
<b>WG3140978-6</b>	<b>DUP</b>	<b>L2333467-1</b>						
Turbidity		23.3	23.4		NTU	0.4	15	22-AUG-19
<b>WG3140978-5</b>	<b>LCS</b>							
Turbidity			93.5		%		85-115	22-AUG-19
<b>WG3140978-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	22-AUG-19



# Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 15 of 16

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2333467

Report Date: 02-SEP-19

Page 16 of 16

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	20-AUG-19 13:25	26-AUG-19 12:50	0.25	144	hours	EHTR-FM
	2	20-AUG-19 12:20	26-AUG-19 12:50	0.25	144	hours	EHTR-FM
	3	20-AUG-19 10:35	26-AUG-19 12:50	0.25	146	hours	EHTR-FM
	4	20-AUG-19 10:45	26-AUG-19 12:50	0.25	146	hours	EHTR-FM
	5	20-AUG-19 08:30	26-AUG-19 12:50	0.25	148	hours	EHTR-FM
	6	20-AUG-19 08:35	26-AUG-19 12:50	0.25	148	hours	EHTR-FM
	7	20-AUG-19 08:40	26-AUG-19 12:50	0.25	148	hours	EHTR-FM
pH							
	1	20-AUG-19 13:25	22-AUG-19 09:00	0.25	44	hours	EHTR-FM
	2	20-AUG-19 12:20	22-AUG-19 09:00	0.25	45	hours	EHTR-FM
	3	20-AUG-19 10:35	22-AUG-19 09:00	0.25	46	hours	EHTR-FM
	4	20-AUG-19 10:45	22-AUG-19 09:00	0.25	46	hours	EHTR-FM
	5	20-AUG-19 08:30	22-AUG-19 09:00	0.25	48	hours	EHTR-FM
	6	20-AUG-19 08:35	23-AUG-19 09:00	0.25	72	hours	EHTR-FM
	7	20-AUG-19 08:40	23-AUG-19 09:00	0.25	72	hours	EHTR-FM

**Anions and Nutrients**

Nitrate in Water by IC (Low Level)

3	20-AUG-19 10:35	27-AUG-19 09:59	3	7	days	EHT
---	-----------------	-----------------	---	---	------	-----

Nitrite in Water by IC (Low Level)

3	20-AUG-19 10:35	27-AUG-19 09:59	3	7	days	EHT
---	-----------------	-----------------	---	---	------	-----

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333467 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20190820Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job-Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS

ANALYSIS REQUESTED

Field - F; Lab - L; Field & Lab - FL; No - N

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	
1 EV_MW_BCI-A_WG_2019_Q3_NP	EV_MW_BCI-A	WG		8/20/2019	13:25	G	5	1	1	1	1						1		
2 EV_MW_BCI-B_WG_2019_Q3_NP	EV_MW_BCI-B	WG		8/20/2019	12:20	G	5	1	1	1	1						1		
3 EV_MW_MC2-A_WG_2019_Q3_NP	EV_MW_MC2-A	WG		8/20/2019	10:35	G	5	1	1	1	1						1		
4 EV_MW_MC2-B_WG_2019_Q3_NP	EV_MW_MC2-B	WG		8/20/2019	10:45	G	5	1	1	1	1						1		
5 EV_MW_MC3_WG_2019_Q3_NP	EV_MW_MC3	WG		8/20/2019	8:30	G	5	1	1	1	1						1		
6 EV_EC5GW_WG_2019-08_NP	EV_EC5GW	WG		8/20/2019	8:35	G	5	1	1	1	1						1		
7 EV_EC6GW_WG_2019-08_NP	EV_EC6GW	WG		8/20/2019	8:40	G	5	1	1	1	1						1		
8 EV_EC7GW_WG_2019-08_NP	EV_EC7GW	WG		8/20/2019	8:45	G	5	1	1	1	1						1		
							Total	40											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_EC6GW and EV_EC7GW - dissolved samples were not filtered or persevered.	Kimberley Hackett	August 20, 2019	DK	8/21/2019

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett	<i>[Signature]</i>		August 20, 2019

10°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 22-AUG-19  
Report Date: 11-SEP-19 11:42 (MT)  
Version: FINAL REV. 2

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2334172  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190821Q3GW  
Legal Site Desc:

Comments: ADDITIONAL 03-SEP-19 15:54

11-SEP-2019 Additional analysis for Dissolved Mercury on L2334172-3.

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2334172-1	L2334172-2	L2334172-3	L2334172-4
		Description	WG	WG	WG	WG
		Sampled Date	21-AUG-19	21-AUG-19	21-AUG-19	21-AUG-19
		Sampled Time	14:20	14:20	10:55	10:55
		Client ID	EV_MW_MC1-A_WG_2019_Q3_NP	EV_MW_MC1-B_WG_2019_Q3_NP	EV_ECGW_WG_2019-08_NP	EV_ECGW_WG_2019-08_FB_HG
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)		<5.0	69.2	<5.0	
	Conductivity (@ 25C) (uS/cm)		877	1080	403	
	Hardness (as CaCO3) (mg/L)		394	552	161	
	pH (pH)		8.01	7.93	8.10	
	ORP (mV)		454	296	278	
	Total Suspended Solids (mg/L)		1.7	29.2	62.2	
	Total Dissolved Solids (mg/L)		523 <sup>DLHC</sup>	701 <sup>DLHC</sup>	227 <sup>DLHC</sup>	
	Turbidity (NTU)		<0.10	167	70.4	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		22.1	26.3	3.9	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		367	404	214	
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)		367	404	214	
	Ammonia as N (mg/L)		1.48 <sup>DLHC</sup>	0.317	0.132	
	Bromide (Br) (mg/L)		0.628	1.07	<0.050	
	Chloride (Cl) (mg/L)		88.0	108	<0.50	
	Fluoride (F) (mg/L)		0.386	0.271	0.787	
	Ion Balance (%)		92.2	105	94.0	
	Nitrate (as N) (mg/L)		<0.0050	<0.0050	0.0519	
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	0.0047	
	Total Kjeldahl Nitrogen (mg/L)		1.57	0.364	0.189	
	Total Nitrogen (mg/L)		1.57	0.364	0.246	
	Orthophosphate-Dissolved (as P) (mg/L)		0.0012	<0.0010	0.0123	
	Phosphorus (P)-Total Dissolved (mg/L)		0.0039	0.0166	0.013 <sup>DLM</sup>	
	Phosphorus (P)-Total (mg/L)		0.0041	0.0272	0.121 <sup>DLHC</sup>	
	Sulfate (SO4) (mg/L)		<0.30	60.1	26.7	
	Anion Sum (meq/L)		9.83	12.4	4.88	
	Cation Sum (meq/L)		9.07	13.0	4.59	
	Cation - Anion Balance (%)		-4.0	2.4	-3.1	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		1.07	1.97	0.88	
	Total Organic Carbon (mg/L)		1.02	1.96	1.37	
<b>Total Metals</b>	Mercury (Hg)-Total (ug/L)				0.00539	<0.00050
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Dissolved (mg/L)		0.00021	<0.00010	0.00021	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2334172-1 WG 21-AUG-19 14:20 EV_MW_MC1- A_WG_2019_Q3_ NP	L2334172-2 WG 21-AUG-19 14:20 EV_MW_MC1-B _WG_2019_Q3_N P	L2334172-3 WG 21-AUG-19 10:55 EV_ECGW_WG_2 019-08_NP	L2334172-4 WG 21-AUG-19 10:55 EV_ECGW_WG_2 019-08_FB_HG	
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Arsenic (As)-Dissolved (mg/L)	0.00210	0.00511	0.00034	
	Barium (Ba)-Dissolved (mg/L)	10.5	1.09	0.0524	
	Beryllium (Be)-Dissolved (ug/L)	<0.040 <sup>DLA</sup>	<0.020	<0.020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.078	0.069	0.129	
	Cadmium (Cd)-Dissolved (ug/L)	<0.010 <sup>DLA</sup>	<0.0050	0.0229	
	Calcium (Ca)-Dissolved (mg/L)	101	143	35.6	
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (ug/L)	<0.20 <sup>DLA</sup>	0.15	0.29	
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00098	
	Iron (Fe)-Dissolved (mg/L)	0.592	11.9	<0.010	
	Lead (Pb)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.163	0.154	0.0117	
	Magnesium (Mg)-Dissolved (mg/L)	34.8	47.4	17.6	
	Manganese (Mn)-Dissolved (mg/L)	0.120	0.508	0.148	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.00054	0.00225	0.0137	
	Nickel (Ni)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	0.00052	0.00132	
	Potassium (K)-Dissolved (mg/L)	4.43	4.11	1.10	
	Selenium (Se)-Dissolved (ug/L)	<0.10 <sup>DLA</sup>	0.065	0.195	
	Silicon (Si)-Dissolved (mg/L)	3.83	6.05	4.98	
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	21.5	26.8	30.4	
	Strontium (Sr)-Dissolved (mg/L)	1.69	0.911	0.404	
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>	<0.000010	0.000041	
	Tin (Sn)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010	0.00013	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.000756	0.000657	0.00178	
	Vanadium (V)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0074	0.0011	<0.0010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2334172-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2334172-1, -2, -3

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-U-CVAF-VA** Water Total Mercury in Water by CVAFS (Ultra) EPA 1631 REV. E

This analysis is carried out using procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode



## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190821Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 1 of 12

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4768873							
WG3143687-2	LCS							
Acidity (as CaCO3)			101.1		%		85-115	26-AUG-19
WG3143687-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
Batch	R4769704							
WG3144261-2	LCS							
Acidity (as CaCO3)			103.6		%		85-115	26-AUG-19
WG3144261-1	MB							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4769684							
WG3144270-2	LCS							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	26-AUG-19
WG3144270-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4769111							
WG3142654-2	LCS							
Beryllium (Be)-Dissolved			97.5		%		80-120	25-AUG-19
WG3142654-1	MB	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-19
WG3142654-4	MS	L2334172-2						
Beryllium (Be)-Dissolved			96.3		%		70-130	25-AUG-19
Batch	R4769674							
WG3142654-3	DUP	L2334172-1						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	27-AUG-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4769110							
WG3143904-2	LCS							
Bromide (Br)			101.5		%		85-115	23-AUG-19
WG3143904-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4768411							
<b>WG3143132-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.7		%		80-120	25-AUG-19
<b>WG3143132-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.2		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143132-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4768411							
<b>WG3143132-10</b>	<b>LCS</b>							
Total Organic Carbon			93.4		%		80-120	25-AUG-19
<b>WG3143132-6</b>	<b>LCS</b>							
Total Organic Carbon			103.0		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>WG3143132-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>CL-IC-N-CL</b>		<b>Water</b>						
Batch	R4769110							
<b>WG3143904-2</b>	<b>LCS</b>							
Chloride (Cl)			104.3		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>COLOUR-TRUE-CL</b>		<b>Water</b>						
Batch	R4765666							
<b>WG3140777-2</b>	<b>LCS</b>							
Colour, True			108.5		%		85-115	22-AUG-19
<b>WG3140777-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	22-AUG-19
<b>EC-L-PCT-CL</b>		<b>Water</b>						
Batch	R4769684							
<b>WG3144270-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	26-AUG-19
<b>WG3144270-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-AUG-19
<b>F-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-2</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769372</b>							
<b>WG3144665-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.1		%		80-120	27-AUG-19
<b>WG3144665-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-AUG-19
<b>Batch</b>	<b>R4795914</b>							
<b>WG3157853-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.3		%		80-120	11-SEP-19
<b>WG3157853-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-19
<b>HG-T-U-CVAF-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769893</b>							
<b>WG3144887-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.2		%		80-120	27-AUG-19
<b>WG3144887-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.00050		ug/L		0.0005	27-AUG-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.7		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.7		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			95.6		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			94.9		%		80-120	25-AUG-19
Boron (B)-Dissolved			111.5		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			96.7		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.6		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.8		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.2		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			98.6		%		80-120	25-AUG-19



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-2</b>	<b>LCS</b>							
Lead (Pb)-Dissolved			99.2		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			96.7		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			95.4		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.3		%		80-120	25-AUG-19
Potassium (K)-Dissolved			97.3		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			103.4		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			107.1		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.8		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			100.2		%		80-120	25-AUG-19
Strontium (Sr)-Dissolved			98.5		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			97.9		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			95.0		%		80-120	25-AUG-19
Uranium (U)-Dissolved			103.8		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.3		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>WG3142654-4</b>	<b>MS</b>	<b>L2334172-2</b>						
Aluminum (Al)-Dissolved			100.1		%		70-130	25-AUG-19
Antimony (Sb)-Dissolved			98.8		%		70-130	25-AUG-19
Arsenic (As)-Dissolved			102.4		%		70-130	25-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Bismuth (Bi)-Dissolved			92.7		%		70-130	25-AUG-19
Boron (B)-Dissolved			123.0		%		70-130	25-AUG-19
Cadmium (Cd)-Dissolved			100.2		%		70-130	25-AUG-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Chromium (Cr)-Dissolved			98.0		%		70-130	25-AUG-19
Cobalt (Co)-Dissolved			92.3		%		70-130	25-AUG-19
Copper (Cu)-Dissolved			91.8		%		70-130	25-AUG-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Lead (Pb)-Dissolved			95.2		%		70-130	25-AUG-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	25-AUG-19
Molybdenum (Mo)-Dissolved			97.3		%		70-130	25-AUG-19
Nickel (Ni)-Dissolved			90.5		%		70-130	25-AUG-19



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-4 MS</b>		<b>L2334172-2</b>						
Potassium (K)-Dissolved			N/A	MS-B	%	-		25-AUG-19
Selenium (Se)-Dissolved			119.3		%		70-130	25-AUG-19
Silicon (Si)-Dissolved			91.4		%		70-130	25-AUG-19
Silver (Ag)-Dissolved			99.7		%		70-130	25-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%	-		25-AUG-19
Strontium (Sr)-Dissolved			N/A	MS-B	%	-		25-AUG-19
Thallium (Tl)-Dissolved			96.3		%		70-130	25-AUG-19
Tin (Sn)-Dissolved			99.2		%		70-130	25-AUG-19
Titanium (Ti)-Dissolved			99.8		%		70-130	25-AUG-19
Uranium (U)-Dissolved			102.0		%		70-130	25-AUG-19
Vanadium (V)-Dissolved			100.9		%		70-130	25-AUG-19
Zinc (Zn)-Dissolved			93.8		%		70-130	25-AUG-19
<b>Batch</b>	<b>R4769674</b>							
<b>WG3142654-3 DUP</b>		<b>L2334172-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-AUG-19
Antimony (Sb)-Dissolved		0.00021	0.00023		mg/L	5.1	20	27-AUG-19
Arsenic (As)-Dissolved		0.00210	0.00199		mg/L	5.3	20	27-AUG-19
Barium (Ba)-Dissolved		10.5	10.2		mg/L	3.2	20	27-AUG-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19
Boron (B)-Dissolved		0.078	0.077		mg/L	1.2	20	27-AUG-19
Cadmium (Cd)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-AUG-19
Calcium (Ca)-Dissolved		101	97.7		mg/L	2.9	20	27-AUG-19
Chromium (Cr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-AUG-19
Cobalt (Co)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-AUG-19
Iron (Fe)-Dissolved		0.592	0.581		mg/L	1.9	20	27-AUG-19
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19
Lithium (Li)-Dissolved		0.163	0.153		mg/L	6.3	20	27-AUG-19
Magnesium (Mg)-Dissolved		34.8	34.7		mg/L	0.2	20	27-AUG-19
Manganese (Mn)-Dissolved		0.120	0.120		mg/L	0.6	20	27-AUG-19
Molybdenum (Mo)-Dissolved		0.00054	0.00056		mg/L	4.5	20	27-AUG-19
Nickel (Ni)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-AUG-19
Potassium (K)-Dissolved		4.43	4.42		mg/L	0.3	20	27-AUG-19
Selenium (Se)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-19



## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769674</b>							
<b>WG3142654-3</b>	<b>DUP</b>	<b>L2334172-1</b>						
Silicon (Si)-Dissolved		3.83	3.78		mg/L	1.2	20	27-AUG-19
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-AUG-19
Sodium (Na)-Dissolved		21.5	21.4		mg/L	0.6	20	27-AUG-19
Strontium (Sr)-Dissolved		1.69	1.71		mg/L	1.0	20	27-AUG-19
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-AUG-19
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	27-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-AUG-19
Uranium (U)-Dissolved		0.000756	0.000763		mg/L	0.9	20	27-AUG-19
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	27-AUG-19
Zinc (Zn)-Dissolved		0.0074	0.0076		mg/L	2.7	20	27-AUG-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769664</b>							
<b>WG3143694-38</b>	<b>LCS</b>							
Ammonia as N			105.9		%		85-115	26-AUG-19
<b>WG3143694-37</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-2</b>	<b>LCS</b>							
Nitrite (as N)			104.0		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-2</b>	<b>LCS</b>							
Nitrate (as N)			103.5		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4773131</b>							
<b>WG3145474-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	27-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								





## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4768218							
<b>WG3142667-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.3		%		80-120	24-AUG-19
<b>WG3142667-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.7		%		80-120	24-AUG-19
<b>WG3142667-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>WG3142667-21</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>P-TD-L-COL-CL</b>		<b>Water</b>						
Batch	R4768218							
<b>WG3142667-18</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			102.3		%		80-120	24-AUG-19
<b>WG3142667-22</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			102.7		%		80-120	24-AUG-19
<b>WG3142667-17</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	24-AUG-19
<b>WG3142667-21</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b>		<b>Water</b>						
Batch	R4769684							
<b>WG3144270-2</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	26-AUG-19
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4765949							
<b>WG3140634-31</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.4		%		80-120	22-AUG-19
<b>WG3140634-34</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.3		%		80-120	22-AUG-19
<b>WG3140634-8</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>WG3140634-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4769110							
<b>WG3143904-2</b>	<b>LCS</b>							
Sulfate (SO4)			105.2		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-26</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4773119</b>							
<b>WG3144490-4</b>	<b>LCS</b>							
Total Suspended Solids			104.2		%		85-115	27-AUG-19
<b>WG3144490-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-AUG-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768077</b>							
<b>WG3142660-15</b>	<b>DUP</b>	<b>L2334172-3</b>						
Turbidity		70.4	70.3		NTU	0.1	15	24-AUG-19
<b>WG3142660-3</b>	<b>DUP</b>	<b>L2334172-2</b>						
Turbidity		167	167		NTU	0.0	15	24-AUG-19
<b>WG3142660-14</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	24-AUG-19
<b>WG3142660-2</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	24-AUG-19
<b>WG3142660-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-AUG-19
<b>WG3142660-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334172

Report Date: 11-SEP-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	21-AUG-19 14:20	27-AUG-19 10:30	0.25	140	hours	EHTR-FM
	2	21-AUG-19 14:20	27-AUG-19 10:30	0.25	140	hours	EHTR-FM
	3	21-AUG-19 10:55	27-AUG-19 10:30	0.25	144	hours	EHTR-FM
pH	1	21-AUG-19 14:20	26-AUG-19 09:00	0.25	115	hours	EHTR-FM
	2	21-AUG-19 14:20	26-AUG-19 09:00	0.25	115	hours	EHTR-FM
	3	21-AUG-19 10:55	26-AUG-19 09:00	0.25	118	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334172 were received on 22-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>	<b>20190821Q3GW</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>					
PROJECT/CLIENT INFO		LABORATORY			OTHER INFO				
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary		Report Format / Distribution		Excl	PDF	EDD
Job Description	Q3 Ground Water Sampling	Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin	Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com	Address	2559 29 Street NE		Email 3:	bryan.ogdunn@teck.com	X	X	X
Address	RR#1 HWY# 3				Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
					Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB		
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada		
Phone Number	1-250-865-5289			Phone Number	403-407-1800	PO number	VPO00610852		

**SAMPLE DETAILS** **ANALYSIS REQUESTED** Filtered: F: Field, L: Lab, FL: Field & Lab, N: None



L2334172-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yc /No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED												
								TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury		
EV_MW_MCI-A_WG_2019_Q3_NP	EV_MW_MCI-A	WG		8/21/2019	14:20	G	5	1	1	1	1									
EV_MW_MCI-B_WG_2019_Q3_NP	EV_MW_MCI-B	WG		8/21/2019	14:20	G	5	1	1	1										
EV_ECGW_WG_2019-08_NP	EV_ECGW	WG		8/21/2019	10:55	G	5	1	1	1			1							
EV_ECGW_WG_2019-08_FB_HG	EV_ECGW	WG		8/21/2019	10:55	G	1						1							
							Total	16												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	August 21, 2019	<i>vh</i>	<i>Bpr 0900</i>

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>	<b>Kimberley Hackett</b>	<b>Mobile #</b>	
Regular (default) X	Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>	<i>Kimberley Hackett</i>	<b>Date/Time</b>	August 21, 2019
	Emergency (1 Business Day) - 100% surcharge				
	For Emergency <1 Day, ASAP or Weekend - Contact ALS				

30C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 22-AUG-19  
Report Date: 30-AUG-19 17:45 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2334225  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190821Q3POT  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2334225-1 WG 21-AUG-19 09:30 EV_WH50GW_WG_2019-08_NP	L2334225-2 WG 21-AUG-19 08:25 EV_RCSGW_WG_2019-08_NP	L2334225-3 WG 21-AUG-19 09:00 EV_HW1_WG_2019-08_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	
	Conductivity (@ 25C) (uS/cm)	451	2320	1220	
	Hardness (as CaCO3) (mg/L)	238	1590	687	
	pH (pH)	8.10	8.04	7.99	
	ORP (mV)	328	463	469	
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	
	Total Dissolved Solids (mg/L)	271 <sup>DLHC</sup>	2300 <sup>DLHC</sup>	913 <sup>DLHC</sup>	
	Turbidity (NTU)	3.58	0.15	0.19	
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.5	13.7	14.2	
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	155	275	244	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	155	275	244	
	Ammonia as N (mg/L)	0.142	0.0207	<0.0050	
	Bromide (Br) (mg/L)	0.069	<0.50 <sup>DLHC</sup>	1.09 <sup>DLHC</sup>	
	Chloride (Cl) (mg/L)	1.83	16.4 <sup>DLHC</sup>	29.2 <sup>DLHC</sup>	
	Fluoride (F) (mg/L)	0.145	<0.20 <sup>DLHC</sup>	<0.20 <sup>DLHC</sup>	
	Ion Balance (%)	97.1	97.2	96.1	
	Nitrate (as N) (mg/L)	1.11	33.3 <sup>DLHC</sup>	8.47 <sup>DLHC</sup>	
	Nitrite (as N) (mg/L)	<0.0010	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	
	Total Kjeldahl Nitrogen (mg/L)	0.220	0.252 <sup>TKNI</sup>	0.338 <sup>TKNI</sup>	
	Total Nitrogen (mg/L)	1.33	33.5	8.81	
	Orthophosphate-Dissolved (as P) (mg/L)	0.0053	0.0021	0.0031 <sup>RRV</sup>	
	Phosphorus (P)-Total Dissolved (mg/L)	0.0044	<0.0020	0.0036 <sup>DLM</sup>	
	Phosphorus (P)-Total (mg/L)	0.0092	0.0021	0.0035 <sup>DLM</sup>	
	Sulfate (SO4) (mg/L)	87.5	1180 <sup>DLHC</sup>	411 <sup>DLHC</sup>	
	Anion Sum (meq/L)	5.05	33.0	14.9	
	Cation Sum (meq/L)	4.90	32.1	14.3	
	Cation - Anion Balance (%)	-1.5	-1.4	-2.0	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.07	1.36	<0.50	
	Total Organic Carbon (mg/L)	1.07	1.19	<0.50	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	0.0044	
	Antimony (Sb)-Dissolved (mg/L)	0.00017	0.00022	0.00011	
	Arsenic (As)-Dissolved (mg/L)	0.00010	<0.00010	<0.00010	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L2334225-1	L2334225-2	L2334225-3		
					WG	WG	WG		
		21-AUG-19	09:30	EV_WH50GW_WG_2019-08_NP					
		21-AUG-19	08:25	EV_RCSGW_WG_2019-08_NP					
		21-AUG-19	09:00	EV_HW1_WG_2019-08_NP					
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0958	0.0371	0.0570					
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020					
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050					
	Boron (B)-Dissolved (mg/L)	0.012	0.017	0.024					
	Cadmium (Cd)-Dissolved (ug/L)	0.0186	0.325	0.0846					
	Calcium (Ca)-Dissolved (mg/L)	58.8	330	162					
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00013	0.00018					
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.15	<0.10					
	Copper (Cu)-Dissolved (mg/L)	<0.00050	0.0661	0.0402					
	Iron (Fe)-Dissolved (mg/L)	0.027	<0.010	<0.010					
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000300	0.000129					
	Lithium (Li)-Dissolved (mg/L)	0.0103	0.0636	0.0536					
	Magnesium (Mg)-Dissolved (mg/L)	22.1	186	68.4					
	Manganese (Mn)-Dissolved (mg/L)	0.00455	0.00963	0.00034					
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050					
	Molybdenum (Mo)-Dissolved (mg/L)	0.00124	0.00138	0.000663					
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00842	0.00090					
	Potassium (K)-Dissolved (mg/L)	1.00	3.40	2.30					
	Selenium (Se)-Dissolved (ug/L)	10.3	257	54.7					
	Silicon (Si)-Dissolved (mg/L)	2.52	4.33	3.62					
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010					
	Sodium (Na)-Dissolved (mg/L)	2.83	5.54	11.6					
	Strontium (Sr)-Dissolved (mg/L)	0.140	0.382	0.361					
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000015	0.000019					
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010					
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010					
	Uranium (U)-Dissolved (mg/L)	0.00103	0.00795	0.00169					
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050					
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.478	0.0404					

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2334225-2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2334225-2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2334225-2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2334225-2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2334225-2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2334225-2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190821Q3POT

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*







## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R4769684								
WG3144270-4 MB								
Conductivity (@ 25C)								
			<2.0		uS/cm		2	26-AUG-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R4769110								
WG3143904-2 LCS								
Fluoride (F)								
			105.5		%		90-110	23-AUG-19
WG3143904-1 MB								
Fluoride (F)								
			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch R4775448								
WG3146551-2 LCS								
Mercury (Hg)-Dissolved								
			98.1		%		80-120	29-AUG-19
WG3146551-1 MB								
Mercury (Hg)-Dissolved								
		NP	<0.000005C		mg/L		0.000005	29-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch R4769109								
WG3143361-2 LCS								
Aluminum (Al)-Dissolved								
			97.6		%		80-120	27-AUG-19
Antimony (Sb)-Dissolved								
			92.3		%		80-120	27-AUG-19
Arsenic (As)-Dissolved								
			95.8		%		80-120	27-AUG-19
Barium (Ba)-Dissolved								
			94.8		%		80-120	27-AUG-19
Bismuth (Bi)-Dissolved								
			96.7		%		80-120	27-AUG-19
Boron (B)-Dissolved								
			104.1		%		80-120	27-AUG-19
Cadmium (Cd)-Dissolved								
			94.6		%		80-120	27-AUG-19
Calcium (Ca)-Dissolved								
			95.4		%		80-120	27-AUG-19
Chromium (Cr)-Dissolved								
			95.5		%		80-120	27-AUG-19
Cobalt (Co)-Dissolved								
			94.1		%		80-120	27-AUG-19
Copper (Cu)-Dissolved								
			95.3		%		80-120	27-AUG-19
Iron (Fe)-Dissolved								
			104.0		%		80-120	27-AUG-19
Lead (Pb)-Dissolved								
			98.9		%		80-120	27-AUG-19
Lithium (Li)-Dissolved								
			96.6		%		80-120	27-AUG-19
Magnesium (Mg)-Dissolved								
			94.5		%		80-120	27-AUG-19
Manganese (Mn)-Dissolved								
			98.3		%		80-120	27-AUG-19
Molybdenum (Mo)-Dissolved								
			99.3		%		80-120	27-AUG-19
Nickel (Ni)-Dissolved								
			95.3		%		80-120	27-AUG-19



## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769109</b>							
<b>WG3143361-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			100.2		%		80-120	27-AUG-19
Selenium (Se)-Dissolved			97.1		%		80-120	27-AUG-19
Silicon (Si)-Dissolved			100.4		%		60-140	27-AUG-19
Silver (Ag)-Dissolved			92.4		%		80-120	27-AUG-19
Sodium (Na)-Dissolved			100.2		%		80-120	27-AUG-19
Strontium (Sr)-Dissolved			100.9		%		80-120	27-AUG-19
Thallium (Tl)-Dissolved			100.3		%		80-120	27-AUG-19
Tin (Sn)-Dissolved			95.0		%		80-120	27-AUG-19
Titanium (Ti)-Dissolved			96.5		%		80-120	27-AUG-19
Uranium (U)-Dissolved			103.7		%		80-120	27-AUG-19
Vanadium (V)-Dissolved			96.7		%		80-120	27-AUG-19
Zinc (Zn)-Dissolved			93.9		%		80-120	27-AUG-19
<b>WG3143361-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-AUG-19





## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769109</b>							
<b>WG3143361-1</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.2		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.8		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.4		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			96.5		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			101.8		%		80-120	25-AUG-19
Boron (B)-Dissolved			101.0		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			99.1		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.0		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.9		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.6		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			97.0		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			102.5		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			98.3		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.6		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			96.6		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			96.0		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.7		%		80-120	25-AUG-19
Potassium (K)-Dissolved			95.8		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			97.8		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			98.0		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.6		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			98.9		%		80-120	25-AUG-19



## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			96.4		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			102.1		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			97.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			87.7		%		80-120	25-AUG-19
Uranium (U)-Dissolved			102.1		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.7		%		80-120	25-AUG-19
<b>WG3142803-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
Batch	R4769111							
<b>WG3142803-1 MB</b>		<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>NH3-L-F-CL</b>								
Batch	R4771632							
<b>WG3144930-34 LCS</b>								
Ammonia as N			103.7		%		85-115	27-AUG-19
<b>WG3144930-33 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>NO2-L-IC-N-CL</b>								
Batch	R4769110							
<b>WG3143904-2 LCS</b>								
Nitrite (as N)			104.0		%		90-110	23-AUG-19
<b>WG3143904-1 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4769110							
<b>WG3143904-2 LCS</b>								
Nitrate (as N)			103.5		%		90-110	23-AUG-19
<b>WG3143904-1 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>ORP-CL</b>								
Batch	R4773131							
<b>WG3145474-3 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	27-AUG-19
<b>P-T-L-COL-CL</b>								
Batch	R4768218							
<b>WG3142667-22 LCS</b>								
Phosphorus (P)-Total			102.7		%		80-120	24-AUG-19
<b>WG3142667-21 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>P-TD-L-COL-CL</b>								
	Water							



## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R4768218							
<b>WG3142667-22</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		102.7		%		80-120	24-AUG-19
<b>WG3142667-21</b>	<b>MB</b>							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4769684							
<b>WG3144270-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	26-AUG-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4765949							
<b>WG3140634-34</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.3		%		80-120	22-AUG-19
<b>WG3140634-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4769110							
<b>WG3143904-2</b>	<b>LCS</b>							
Sulfate (SO4)			105.2		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4773174							
<b>WG3144387-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.6		%		85-115	27-AUG-19
<b>WG3144387-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	27-AUG-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4778448							
<b>WG3148809-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-13</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19



## Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4773119</b>							
<b>WG3144490-4</b>	<b>LCS</b>							
Total Suspended Solids			104.2		%		85-115	27-AUG-19
<b>WG3144490-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767812</b>							
<b>WG3142369-11</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	23-AUG-19
<b>WG3142369-8</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	23-AUG-19
<b>WG3142369-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-AUG-19
<b>WG3142369-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-AUG-19

# Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334225

Report Date: 30-AUG-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	21-AUG-19 09:30	27-AUG-19 10:30	0.25	145	hours	EHTR-FM
	2	21-AUG-19 08:25	27-AUG-19 10:30	0.25	146	hours	EHTR-FM
	3	21-AUG-19 09:00	27-AUG-19 10:30	0.25	145	hours	EHTR-FM
pH	1	21-AUG-19 09:30	26-AUG-19 09:00	0.25	120	hours	EHTR-FM
	2	21-AUG-19 08:25	26-AUG-19 09:00	0.25	120	hours	EHTR-FM
	3	21-AUG-19 09:00	26-AUG-19 09:00	0.25	120	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334225 were received on 22-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20190821Q3POT**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	TeckLab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500 NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_WH50gw_WG_2019-08_NP	EV_WH50gw	WG		8/21/2019	9:30	G	5	1		1	1		1					1		
EV_RCSgw_WG_2019-08_NP	EV_RCSgw	WG		8/21/2019	8:25	G	5	1		1	1		1					1		
EV_HW1_WG_2019-08_NP	EV_HW1	WG		8/21/2019	9:00	G	5	1		1	1		1					1		
							Total	15												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS: [REDACTED]

RELINQUISHED BY/AFFILIATION: Kimberley Hackett      DATE/TIME: August 21, 2019

ACCEPTED BY/AFFILIATION: *DK*      DATE/TIME: *8/21/2019*

SERVICE REQUEST (rush - subject to availability)

Regular (default)       Priority (2-3 business days) - 50% surcharge      Emergency (1 Business Day) - 100% surcharge      For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Kimberley Hackett      Mobile #:      Date/Time: August 21, 2019

Sampler's Signature: *[Signature]*

30c





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 23-AUG-19  
Report Date: 03-SEP-19 09:59 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2334796  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190822Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2334796-1	L2334796-2	L2334796-3
		Description	WG	WG	WG
		Sampled Date	22-AUG-19	22-AUG-19	22-AUG-19
		Sampled Time	12:15	15:00	11:25
		Client ID	EV_MW_SC1- A_WG_2019_Q3_ NP	EV_MW_SC1- B_WG_2019_Q3_ NP	EV_MW_SC1- C_WG_2019_Q3_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)		<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)		642	476	563
	Hardness (as CaCO3) (mg/L)		336	150	286
	pH (pH)		8.04	8.19	8.12
	ORP (mV)		357	305	318
	Total Suspended Solids (mg/L)		2.0	51.0	<1.0
	Total Dissolved Solids (mg/L)		342 <sup>DLHC</sup>	274 <sup>DLHC</sup>	325 <sup>DLHC</sup>
	Turbidity (NTU)		3.95	75.2	1.09
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		16.4	4.3	7.3
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		329	204	224
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		329	204	224
	Ammonia as N (mg/L)		0.0759	0.186	<0.0050
	Bromide (Br) (mg/L)		<0.050	<0.050	0.196
	Chloride (Cl) (mg/L)		15.5	1.56	18.9
	Fluoride (F) (mg/L)		0.226	1.20	0.170
	Ion Balance (%)		94.8	93.5	94.2
	Nitrate (as N) (mg/L)		<0.0050	<0.0050	0.412
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)		0.079	0.247	<0.050
	Total Nitrogen (mg/L)		0.079	0.247	0.412
	Orthophosphate-Dissolved (as P) (mg/L)		<0.0010	0.0013	0.0036 <sup>RRV</sup>
	Phosphorus (P)-Total Dissolved (mg/L)		<0.0020	<0.0020	0.0061 <sup>DLM</sup>
	Phosphorus (P)-Total (mg/L)		0.0035	0.0957	0.0066 <sup>DLM</sup>
	Sulfate (SO4) (mg/L)		24.7	66.3	63.0
	Anion Sum (meq/L)		7.53	5.56	6.36
	Cation Sum (meq/L)		7.14	5.20	5.98
	Cation - Anion Balance (%)		-2.7	-3.4	-3.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		0.72	1.65	0.63
	Total Organic Carbon (mg/L)		0.69	2.61	0.62
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030	0.0117
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	0.00016	0.00011
	Arsenic (As)-Dissolved (mg/L)		0.00133	0.00072	<0.00010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2334796-1	L2334796-2	L2334796-3
		Description	WG	WG	WG
		Sampled Date	22-AUG-19	22-AUG-19	22-AUG-19
		Sampled Time	12:15	15:00	11:25
		Client ID	EV_MW_SC1- A_WG_2019_Q3_ NP	EV_MW_SC1- B_WG_2019_Q3_ NP	EV_MW_SC1- C_WG_2019_Q3_ NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)		0.404	0.0430	0.129
	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.024	0.142	0.016
	Cadmium (Cd)-Dissolved (ug/L)		<0.0050	<0.0050	0.0487
	Calcium (Ca)-Dissolved (mg/L)		86.2	35.0	75.6
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	0.00018
	Cobalt (Co)-Dissolved (ug/L)		0.54	0.15	<0.10
	Copper (Cu)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)		0.490	0.083	0.015
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0152	0.0112	0.0131
	Magnesium (Mg)-Dissolved (mg/L)		29.3	15.3	23.7
	Manganese (Mn)-Dissolved (mg/L)		0.317	0.109	0.00324
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00129	0.0255	0.000911
	Nickel (Ni)-Dissolved (mg/L)		0.00146	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		2.25	1.39	1.16
	Selenium (Se)-Dissolved (ug/L)		<0.050	<0.050	5.34
	Silicon (Si)-Dissolved (mg/L)		3.81	3.94	2.80
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		7.65	49.5	5.30
	Strontium (Sr)-Dissolved (mg/L)		0.297	0.470	0.161
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00203	0.00258	0.00104
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	0.0011	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
<b>Qualifiers for Individual Parameters Listed:</b>			
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).		
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).		
RRV	Reported Result Verified By Repeat Analysis		

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			

## Reference Information

<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are			

## Reference Information

included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190822Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769704</b>							
<b>WG3144261-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	26-AUG-19
<b>WG3144261-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769684</b>							
<b>WG3144270-9</b>	<b>DUP</b>	<b>L2334796-1</b>						
Alkalinity, Total (as CaCO3)		329	327		mg/L	0.5	20	26-AUG-19
<b>WG3144270-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.0		%		85-115	26-AUG-19
<b>WG3144270-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-10</b>	<b>LCS</b>							
Bromide (Br)			99.6		%		85-115	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.6		%		80-120	25-AUG-19
<b>WG3143147-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768418</b>							
<b>WG3143147-10</b>	<b>LCS</b>							
Total Organic Carbon			97.9		%		80-120	25-AUG-19
<b>WG3143147-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Chloride (Cl)			103.6		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4767336							
<b>WG3141799-2</b>	<b>LCS</b>							
Colour, True			103.1		%		85-115	23-AUG-19
<b>WG3141799-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	23-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4769684							
<b>WG3144270-9</b>	<b>DUP</b>	<b>L2334796-1</b>						
Conductivity (@ 25C)		642	643		uS/cm	0.2	10	26-AUG-19
<b>WG3144270-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.5		%		90-110	26-AUG-19
<b>WG3144270-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4777943							
<b>WG3146604-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.3		%		80-120	30-AUG-19
<b>WG3146604-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4770053							
<b>WG3143505-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.7		%		80-120	26-AUG-19
Antimony (Sb)-Dissolved			95.1		%		80-120	26-AUG-19
Arsenic (As)-Dissolved			97.7		%		80-120	26-AUG-19
Barium (Ba)-Dissolved			99.8		%		80-120	26-AUG-19





## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			96.3		%		80-120	26-AUG-19
Boron (B)-Dissolved			97.2		%		80-120	26-AUG-19
Cadmium (Cd)-Dissolved			97.3		%		80-120	26-AUG-19
Calcium (Ca)-Dissolved			94.0		%		80-120	26-AUG-19
Chromium (Cr)-Dissolved			99.2		%		80-120	26-AUG-19
Cobalt (Co)-Dissolved			97.8		%		80-120	26-AUG-19
Copper (Cu)-Dissolved			98.2		%		80-120	26-AUG-19
Iron (Fe)-Dissolved			100.6		%		80-120	26-AUG-19
Lead (Pb)-Dissolved			98.1		%		80-120	26-AUG-19
Lithium (Li)-Dissolved			96.8		%		80-120	26-AUG-19
Magnesium (Mg)-Dissolved			98.0		%		80-120	26-AUG-19
Manganese (Mn)-Dissolved			99.4		%		80-120	26-AUG-19
Molybdenum (Mo)-Dissolved			94.0		%		80-120	26-AUG-19
Nickel (Ni)-Dissolved			98.4		%		80-120	26-AUG-19
Potassium (K)-Dissolved			98.9		%		80-120	26-AUG-19
Selenium (Se)-Dissolved			98.5		%		80-120	26-AUG-19
Silicon (Si)-Dissolved			99.8		%		60-140	26-AUG-19
Silver (Ag)-Dissolved			93.7		%		80-120	26-AUG-19
Sodium (Na)-Dissolved			103.6		%		80-120	26-AUG-19
Strontium (Sr)-Dissolved			98.6		%		80-120	26-AUG-19
Thallium (Tl)-Dissolved			99.1		%		80-120	26-AUG-19
Tin (Sn)-Dissolved			94.9		%		80-120	26-AUG-19
Titanium (Ti)-Dissolved			94.3		%		80-120	26-AUG-19
Uranium (U)-Dissolved			103.3		%		80-120	26-AUG-19
Vanadium (V)-Dissolved			100.6		%		80-120	26-AUG-19
Zinc (Zn)-Dissolved			99.8		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-19



## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771632</b>							
<b>WG3144930-31</b>	<b>DUP</b>	<b>L2334796-3</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-AUG-19
<b>WG3144930-30</b>	<b>LCS</b>							
Ammonia as N			103.7		%		85-115	27-AUG-19
<b>WG3144930-34</b>	<b>LCS</b>							
Ammonia as N			103.7		%		85-115	27-AUG-19
<b>WG3144930-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>WG3144930-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19





## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4769684							
WG3144270-8	LCS							
pH			7.01		pH		6.9-7.1	26-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4767870							
WG3142434-4	LCS							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19
WG3142434-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
WG3143904-10	LCS							
Sulfate (SO4)			104.9		%		90-110	23-AUG-19
WG3143904-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4777452							
WG3145045-5	LCS							
Total Dissolved Solids			94.6		%		85-115	28-AUG-19
WG3145045-4	MB							
Total Dissolved Solids			<10		mg/L		10	28-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4778448							
WG3148809-14	DUP	L2334796-1						
Total Kjeldahl Nitrogen		0.079	0.078		mg/L	2.3	20	30-AUG-19
WG3148809-10	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
WG3148809-13	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
WG3148809-16	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
WG3148809-2	LCS							
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
WG3148809-24	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
WG3148809-27	LCS							
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
WG3148809-31	LCS							



## Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-31</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4773119</b>							
<b>WG3144490-4</b>	<b>LCS</b>							
Total Suspended Solids			104.2		%		85-115	27-AUG-19
<b>WG3144490-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	27-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4768077</b>							
<b>WG3142660-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	24-AUG-19
<b>WG3142660-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334796

Report Date: 03-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	22-AUG-19 12:15	27-AUG-19 13:30	0.25	121	hours	EHTR-FM
	2	22-AUG-19 15:00	27-AUG-19 13:30	0.25	119	hours	EHTR-FM
	3	22-AUG-19 11:25	27-AUG-19 13:30	0.25	122	hours	EHTR-FM
pH	1	22-AUG-19 12:15	26-AUG-19 09:00	0.25	93	hours	EHTR-FM
	2	22-AUG-19 15:00	26-AUG-19 09:00	0.25	90	hours	EHTR-FM
	3	22-AUG-19 11:25	26-AUG-19 09:00	0.25	94	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334796 were received on 23-AUG-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:

20190822Q3GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution				
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberly.hackett@teck.com	Excel	PDF	EDD
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@egisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED																			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	Nitric	Sulphuric	Sulphuric	Sodium Bisulphate	HCl				
EV_MW_SCI-A_WG_2019_Q3_NP	EV_MW_SCI-A	WG		8/22/2019	12:15	G	5	1	1	1	1	1	1	1				1									
EV_MW_SCI-B_WG_2019_Q3_NP	EV_MW_SCI-B	WG		8/22/2019	15:00	G	5	1	1	1	1	1	1	1				1									
EV_MW_SCI-C_WG_2019-Q3_NP	EV_MW_SCI-C	WG		8/22/2019	11:25	G	5	1	1	1	1	1	1	1				1									
							Total	20																			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
- dissolved samples were not filtered or persevered.	Jason Gravelle	August 22, 2019		8/23 8:45

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberly Hackett			August 22, 2019

7c





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 27-AUG-19  
Report Date: 06-SEP-19 18:13 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-5289

## Certificate of Analysis

Lab Work Order #: L2336834  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190826Q3GW  
Legal Site Desc:

### Comments:

6-SEP-2019 Final report.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2336834-1 WG 26-AUG-19 10:25 EV_MW_GT1- A_WG_2019_Q3_ NP	L2336834-2 WG 26-AUG-19 10:05 EV_MW_GT1- B_WG_2019_Q3_ NP	L2336834-3 WG 26-AUG-19 11:55 EV_MW_AQ1_WG _2019_Q3_NP	L2336834-4 WG 26-AUG-19 10:10 EV_EC5GW_WG_ 2019-08-26_NP	L2336834-5 WG 26-AUG-19 10:15 EV_EC6GW_WG_ 2019-08-26_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Colour, True (CU)	<5.0	<5.0	<5.0	<5.0	<5.0
	Conductivity (@ 25C) (uS/cm)	536	1740	830	1740	<2.0
	Hardness (as CaCO3) (mg/L)	300	1080	441	1070	<0.50
	pH (pH)	8.02	7.95	7.80	7.96	5.63
	ORP (mV)	401	449	472	489	452
	Total Suspended Solids (mg/L)	<1.0	<1.0	1.5	<1.0	<1.0
	Total Dissolved Solids (mg/L)	355 <sup>DLHC</sup>	1450 <sup>DLHC</sup>	477 <sup>DLHC</sup>	1480 <sup>DLHC</sup>	<10
	Turbidity (NTU)	0.93	0.12	2.33	0.11	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	7.4	12.1	27.0	12.0	1.5
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	198	231	372	229	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	198	231	372	229	<1.0
	Ammonia as N (mg/L)	0.0973	0.187 <sup>DLHC</sup>	0.0135	<0.0050 <sup>DLHC</sup>	<0.0050
	Bromide (Br) (mg/L)	0.099	1.49 <sup>DLHC</sup>	0.150	1.54 <sup>DLHC</sup>	<0.050
	Chloride (Cl) (mg/L)	2.72	13.8 <sup>DLHC</sup>	32.4	13.5 <sup>DLHC</sup>	<0.50
	Fluoride (F) (mg/L)	0.154	0.21 <sup>DLHC</sup>	0.231	0.21 <sup>DLHC</sup>	<0.020
	Ion Balance (%)	95.4	92.9 <sup>DLHC</sup>	90.0	92.9 <sup>DLHC</sup>	0.0
	Nitrate (as N) (mg/L)	<0.0050	17.4 <sup>DLHC</sup>	0.188	17.2 <sup>DLHC</sup>	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.118	<0.25 <sup>TKNI</sup>	<0.050	<0.25 <sup>TKNI</sup>	<0.050
	Total Nitrogen (mg/L)	0.118	17.4 <sup>RRV</sup>	0.188 <sup>RRV</sup>	17.2 <sup>RRV</sup>	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0038	0.0101	0.0148	0.0100	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0054	0.0036	0.0055	0.0043	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0048	0.0041 <sup>DLHC</sup>	0.0070	0.0034 <sup>DLHC</sup>	<0.0020
	Sulfate (SO4) (mg/L)	115	840	81.2	829	<0.30
	Anion Sum (meq/L)	6.44	23.7	10.1	23.4	<0.10
	Cation Sum (meq/L)	6.15	22.1	9.05	21.8	<0.10
	Cation - Anion Balance (%)	-2.3	-3.7	-5.3	-3.7	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.00	1.00	0.91	0.79	<0.50
	Total Organic Carbon (mg/L)	1.03	1.07	0.94	0.84	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	LAB
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00187	<0.00010	0.00194	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00059	0.00022	0.00013	0.00023	<0.00010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2336834-6 WG 26-AUG-19 10:20 EV_EC7GW_WG_ 2019-08-26_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	<2.0			
	Hardness (as CaCO3) (mg/L)	<0.50			
	pH (pH)	5.53			
	ORP (mV)	466			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	<10			
	Turbidity (NTU)	<0.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	<0.50			
	Fluoride (F) (mg/L)	<0.020			
	Ion Balance (%)	0.0			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	<0.30			
	Anion Sum (meq/L)	<0.10			
	Cation Sum (meq/L)	<0.10			
	Cation - Anion Balance (%)	0.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB			
	Dissolved Metals Filtration Location	LAB			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2336834-1 WG 26-AUG-19 10:25 EV_MW_GT1- A_WG_2019_Q3_ NP	L2336834-2 WG 26-AUG-19 10:05 EV_MW_GT1- B_WG_2019_Q3_ NP	L2336834-3 WG 26-AUG-19 11:55 EV_MW_AQ1_WG _2019_Q3_NP	L2336834-4 WG 26-AUG-19 10:10 EV_EC5GW_WG_ 2019-08-26_NP	L2336834-5 WG 26-AUG-19 10:15 EV_EC6GW_WG_ 2019-08-26_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0713	0.0748	0.181	0.0756	<0.00010
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.011	0.042	0.021	0.040	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.189	0.0470	0.212	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	81.4	201	104	199	<0.050
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00011	<0.00010	0.00014	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.19	<0.10	0.18	<0.10
	Copper (Cu)-Dissolved (mg/L)	<0.00050	<0.00050	0.00149	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.133	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000086	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0100	0.148	0.0200	0.141	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	23.5	140	43.9	138	<0.10
	Manganese (Mn)-Dissolved (mg/L)	0.0964	0.00020	0.00034	0.00016	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000874	0.00784	0.000321	0.00798	<0.00050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0213	<0.00050	0.0213	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.870	6.45	1.55	6.47	<0.050
	Selenium (Se)-Dissolved (ug/L)	<0.050	161	3.16	161	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.90	2.90	3.86	2.88	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.78	7.76	4.45	7.61	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.140	0.699	0.350	0.726	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000032	<0.000010	0.000031	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000950	0.0104	0.000465	0.00994	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0062	0.0032	0.0062	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2336834-6 WG 26-AUG-19 10:20 EV_EC7GW_WG_ 2019-08-26_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	<0.00010			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	<0.050			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	<0.0010			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	<0.050			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - -5,-6 DOC/D-METAL/D-HG FILTERED AND PRESERVED AT THE LAB

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2336834-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2336834-5, -6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2336834-1, -2, -3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The			

## Reference Information

carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**COLOUR-TRUE-CL** Water Colour (True) by Spectrometer APHA 2120 Color

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**      Water      Phosphorus (P)-Total Dissolved      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20190826Q3GW



## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 1 of 15

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4776550</b>							
<b>WG3146870-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.9		%		85-115	28-AUG-19
<b>WG3146870-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	28-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4776509</b>							
<b>WG3146976-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.9		%		85-115	28-AUG-19
<b>WG3146976-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-3</b>	<b>DUP</b>	<b>L2336834-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3147860-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-AUG-19
<b>WG3147860-4</b>	<b>MS</b>	<b>L2336834-2</b>						
Beryllium (Be)-Dissolved			95.5		%		70-130	30-AUG-19
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148945-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.9		%		80-120	31-AUG-19
<b>WG3148945-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771350</b>							
<b>WG3145701-10</b>	<b>LCS</b>							
Bromide (Br)			104.1		%		85-115	27-AUG-19
<b>WG3145701-6</b>	<b>LCS</b>							
Bromide (Br)			101.0		%		85-115	27-AUG-19
<b>WG3145701-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-AUG-19
<b>WG3145701-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 2 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4776440</b>							
<b>WG3147254-3</b>	<b>DUP</b>	<b>L2336834-2</b>						
Dissolved Organic Carbon		1.00	1.05		mg/L	5.4	20	28-AUG-19
<b>WG3147254-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.7		%		80-120	28-AUG-19
<b>WG3147254-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-AUG-19
<b>WG3147254-4</b>	<b>MS</b>	<b>L2336834-3</b>						
Dissolved Organic Carbon			97.6		%		70-130	28-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4776440</b>							
<b>WG3147254-3</b>	<b>DUP</b>	<b>L2336834-2</b>						
Total Organic Carbon		1.07	1.00		mg/L	6.5	20	28-AUG-19
<b>WG3147254-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	28-AUG-19
<b>WG3147254-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-AUG-19
<b>WG3147254-4</b>	<b>MS</b>	<b>L2336834-3</b>						
Total Organic Carbon			100.9		%		70-130	28-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771350</b>							
<b>WG3145701-10</b>	<b>LCS</b>							
Chloride (Cl)			99.7		%		90-110	27-AUG-19
<b>WG3145701-6</b>	<b>LCS</b>							
Chloride (Cl)			99.6		%		90-110	27-AUG-19
<b>WG3145701-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-AUG-19
<b>WG3145701-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-AUG-19
<b>COLOUR-TRUE-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770070</b>							
<b>WG3145039-3</b>	<b>DUP</b>	<b>L2336834-4</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	27-AUG-19
<b>WG3145039-2</b>	<b>LCS</b>							
Colour, True			104.4		%		85-115	27-AUG-19
<b>WG3145039-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	27-AUG-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 3 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>EC-L-PCT-CL</b>		<b>Water</b>							
Batch	R4776509								
<b>WG3146976-11</b>	<b>LCS</b>								
Conductivity (@ 25C)			98.6		%		90-110	28-AUG-19	
<b>WG3146976-10</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-19	
<b>F-IC-N-CL</b>		<b>Water</b>							
Batch	R4771350								
<b>WG3145701-10</b>	<b>LCS</b>								
Fluoride (F)			102.8		%		90-110	27-AUG-19	
<b>WG3145701-6</b>	<b>LCS</b>								
Fluoride (F)			101.9		%		90-110	27-AUG-19	
<b>WG3145701-5</b>	<b>MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	27-AUG-19	
<b>WG3145701-9</b>	<b>MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	27-AUG-19	
<b>HG-D-CVAA-VA</b>		<b>Water</b>							
Batch	R4782133								
<b>WG3150298-3</b>	<b>DUP</b>	<b>L2336834-2</b>							
Mercury (Hg)-Dissolved			<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	03-SEP-19
<b>WG3150298-2</b>	<b>LCS</b>								
Mercury (Hg)-Dissolved			108.5		%		80-120	03-SEP-19	
<b>WG3150298-1</b>	<b>MB</b>								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-SEP-19	
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	03-SEP-19	
Batch	R4784361								
<b>WG3153593-3</b>	<b>DUP</b>	<b>L2336834-6</b>							
Mercury (Hg)-Dissolved			<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	06-SEP-19
<b>WG3153593-2</b>	<b>LCS</b>								
Mercury (Hg)-Dissolved			96.4		%		80-120	06-SEP-19	
<b>WG3153593-1</b>	<b>MB</b>	<b>LF</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	06-SEP-19	
<b>MET-D-CCMS-VA</b>		<b>Water</b>							
Batch	R4777995								
<b>WG3147860-3</b>	<b>DUP</b>	<b>L2336834-1</b>							
Aluminum (Al)-Dissolved			<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-AUG-19
Arsenic (As)-Dissolved			0.00059	0.00060		mg/L	1.4	20	30-AUG-19
Barium (Ba)-Dissolved			0.0713	0.0681		mg/L	4.6	20	30-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 4 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-3</b>	<b>DUP</b>	<b>L2336834-1</b>						
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-AUG-19
Boron (B)-Dissolved		0.011	0.011		mg/L	1.3	20	30-AUG-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-AUG-19
Calcium (Ca)-Dissolved		81.4	79.2		mg/L	2.7	20	30-AUG-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-AUG-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-AUG-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-AUG-19
Iron (Fe)-Dissolved		0.133	0.133		mg/L	0.5	20	30-AUG-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-AUG-19
Lithium (Li)-Dissolved		0.0100	0.0097		mg/L	3.4	20	30-AUG-19
Magnesium (Mg)-Dissolved		23.5	22.8		mg/L	2.8	20	30-AUG-19
Manganese (Mn)-Dissolved		0.0964	0.0957		mg/L	0.8	20	30-AUG-19
Molybdenum (Mo)-Dissolved		0.000874	0.000898		mg/L	2.7	20	30-AUG-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-AUG-19
Potassium (K)-Dissolved		0.870	0.856		mg/L	1.6	20	30-AUG-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	30-AUG-19
Silicon (Si)-Dissolved		2.90	2.99		mg/L	3.1	20	30-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-AUG-19
Sodium (Na)-Dissolved		2.78	2.71		mg/L	2.3	20	30-AUG-19
Strontium (Sr)-Dissolved		0.140	0.131		mg/L	6.1	20	30-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	30-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	30-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	30-AUG-19
Uranium (U)-Dissolved		0.000950	0.000902		mg/L	5.2	20	30-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	30-AUG-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3147860-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.6		%		80-120	30-AUG-19
Antimony (Sb)-Dissolved			91.1		%		80-120	30-AUG-19
Arsenic (As)-Dissolved			96.7		%		80-120	30-AUG-19
Barium (Ba)-Dissolved			101.7		%		80-120	30-AUG-19
Bismuth (Bi)-Dissolved			100.1		%		80-120	30-AUG-19
Boron (B)-Dissolved			96.0		%		80-120	30-AUG-19
Cadmium (Cd)-Dissolved			98.8		%		80-120	30-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 5 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			99.4		%		80-120	30-AUG-19
Chromium (Cr)-Dissolved			102.0		%		80-120	30-AUG-19
Cobalt (Co)-Dissolved			100.4		%		80-120	30-AUG-19
Copper (Cu)-Dissolved			95.7		%		80-120	30-AUG-19
Iron (Fe)-Dissolved			99.6		%		80-120	30-AUG-19
Lead (Pb)-Dissolved			101.6		%		80-120	30-AUG-19
Lithium (Li)-Dissolved			101.0		%		80-120	30-AUG-19
Magnesium (Mg)-Dissolved			96.8		%		80-120	30-AUG-19
Manganese (Mn)-Dissolved			100.0		%		80-120	30-AUG-19
Molybdenum (Mo)-Dissolved			98.3		%		80-120	30-AUG-19
Nickel (Ni)-Dissolved			97.7		%		80-120	30-AUG-19
Potassium (K)-Dissolved			100.3		%		80-120	30-AUG-19
Selenium (Se)-Dissolved			100.4		%		80-120	30-AUG-19
Silicon (Si)-Dissolved			103.3		%		60-140	30-AUG-19
Silver (Ag)-Dissolved			95.9		%		80-120	30-AUG-19
Sodium (Na)-Dissolved			100.5		%		80-120	30-AUG-19
Strontium (Sr)-Dissolved			99.1		%		80-120	30-AUG-19
Thallium (Tl)-Dissolved			99.7		%		80-120	30-AUG-19
Tin (Sn)-Dissolved			96.6		%		80-120	30-AUG-19
Titanium (Ti)-Dissolved			93.8		%		80-120	30-AUG-19
Uranium (U)-Dissolved			107.2		%		80-120	30-AUG-19
Vanadium (V)-Dissolved			101.2		%		80-120	30-AUG-19
Zinc (Zn)-Dissolved			99.3		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 6 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
<b>WG3147860-4</b>	<b>MS</b>	<b>L2336834-2</b>						
Aluminum (Al)-Dissolved			99.3		%		70-130	30-AUG-19
Antimony (Sb)-Dissolved			101.0		%		70-130	30-AUG-19
Arsenic (As)-Dissolved			104.6		%		70-130	30-AUG-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Bismuth (Bi)-Dissolved			90.9		%		70-130	30-AUG-19
Boron (B)-Dissolved			97.5		%		70-130	30-AUG-19
Cadmium (Cd)-Dissolved			101.2		%		70-130	30-AUG-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-AUG-19
Chromium (Cr)-Dissolved			97.7		%		70-130	30-AUG-19
Cobalt (Co)-Dissolved			96.9		%		70-130	30-AUG-19
Copper (Cu)-Dissolved			90.7		%		70-130	30-AUG-19
Iron (Fe)-Dissolved			95.3		%		70-130	30-AUG-19
Lead (Pb)-Dissolved			97.6		%		70-130	30-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 7 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-4</b>	<b>MS</b>	<b>L2336834-2</b>						
Lithium (Li)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Manganese (Mn)-Dissolved			96.9		%		70-130	30-AUG-19
Molybdenum (Mo)-Dissolved			107.3		%		70-130	30-AUG-19
Nickel (Ni)-Dissolved			88.8		%		70-130	30-AUG-19
Potassium (K)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Selenium (Se)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Silicon (Si)-Dissolved			99.5		%		70-130	30-AUG-19
Silver (Ag)-Dissolved			98.9		%		70-130	30-AUG-19
Sodium (Na)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Strontium (Sr)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Thallium (Tl)-Dissolved			94.8		%		70-130	30-AUG-19
Tin (Sn)-Dissolved			102.2		%		70-130	30-AUG-19
Titanium (Ti)-Dissolved			99.2		%		70-130	30-AUG-19
Uranium (U)-Dissolved			N/A	MS-B	%	-		30-AUG-19
Vanadium (V)-Dissolved			102.5		%		70-130	30-AUG-19
Zinc (Zn)-Dissolved			91.6		%		70-130	30-AUG-19
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148945-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.0		%		80-120	31-AUG-19
Antimony (Sb)-Dissolved			99.3		%		80-120	31-AUG-19
Arsenic (As)-Dissolved			100.5		%		80-120	31-AUG-19
Barium (Ba)-Dissolved			96.3		%		80-120	31-AUG-19
Bismuth (Bi)-Dissolved			101.2		%		80-120	31-AUG-19
Boron (B)-Dissolved			100.8		%		80-120	31-AUG-19
Cadmium (Cd)-Dissolved			100.1		%		80-120	31-AUG-19
Calcium (Ca)-Dissolved			99.7		%		80-120	31-AUG-19
Chromium (Cr)-Dissolved			105.8		%		80-120	31-AUG-19
Cobalt (Co)-Dissolved			101.8		%		80-120	31-AUG-19
Copper (Cu)-Dissolved			100.9		%		80-120	31-AUG-19
Iron (Fe)-Dissolved			100.3		%		80-120	31-AUG-19
Lead (Pb)-Dissolved			99.2		%		80-120	31-AUG-19
Lithium (Li)-Dissolved			97.4		%		80-120	31-AUG-19
Magnesium (Mg)-Dissolved			109.9		%		80-120	31-AUG-19





## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 8 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148945-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			101.7		%		80-120	31-AUG-19
Molybdenum (Mo)-Dissolved			99.9		%		80-120	31-AUG-19
Nickel (Ni)-Dissolved			101.2		%		80-120	31-AUG-19
Potassium (K)-Dissolved			99.0		%		80-120	31-AUG-19
Selenium (Se)-Dissolved			106.5		%		80-120	31-AUG-19
Silicon (Si)-Dissolved			111.3		%		60-140	31-AUG-19
Silver (Ag)-Dissolved			96.0		%		80-120	31-AUG-19
Sodium (Na)-Dissolved			110.9		%		80-120	31-AUG-19
Strontium (Sr)-Dissolved			97.6		%		80-120	31-AUG-19
Thallium (Tl)-Dissolved			98.3		%		80-120	31-AUG-19
Tin (Sn)-Dissolved			99.1		%		80-120	31-AUG-19
Titanium (Ti)-Dissolved			96.7		%		80-120	31-AUG-19
Uranium (U)-Dissolved			96.3		%		80-120	31-AUG-19
Vanadium (V)-Dissolved			104.3		%		80-120	31-AUG-19
Zinc (Zn)-Dissolved			103.2		%		80-120	31-AUG-19
<b>WG3148945-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 9 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3148945-1</b>	<b>MB</b>	<b>LF</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4776248</b>							
<b>WG3145855-54</b>	<b>LCS</b>							
Ammonia as N			105.0		%		85-115	28-AUG-19
<b>WG3145855-58</b>	<b>LCS</b>							
Ammonia as N			104.9		%		85-115	28-AUG-19
<b>WG3145855-53</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-AUG-19
<b>WG3145855-57</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771350</b>							
<b>WG3145701-10</b>	<b>LCS</b>							
Nitrite (as N)			100.5		%		90-110	27-AUG-19
<b>WG3145701-6</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	27-AUG-19
<b>WG3145701-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-AUG-19
<b>WG3145701-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 10 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4771350							
<b>WG3145701-10</b>	<b>LCS</b>							
Nitrate (as N)			99.8		%		90-110	27-AUG-19
<b>WG3145701-6</b>	<b>LCS</b>							
Nitrate (as N)			99.7		%		90-110	27-AUG-19
<b>WG3145701-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-AUG-19
<b>WG3145701-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-AUG-19
<b>ORP-CL</b>		<b>Water</b>						
Batch	R4775407							
<b>WG3146400-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	28-AUG-19
<b>WG3146400-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	28-AUG-19
<b>WG3146400-10</b>	<b>DUP</b>	<b>L2336834-3</b>						
ORP		472	472	J	mV	0.2	15	28-AUG-19
<b>P-T-L-COL-CL</b>		<b>Water</b>						
Batch	R4778432							
<b>WG3147207-11</b>	<b>DUP</b>	<b>L2336834-6</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3147207-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.3		%		80-120	30-AUG-19
<b>WG3147207-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-AUG-19
<b>WG3147207-12</b>	<b>MS</b>	<b>L2336834-6</b>						
Phosphorus (P)-Total			99.8		%		70-130	30-AUG-19
<b>P-TD-L-COL-CL</b>		<b>Water</b>						
Batch	R4778432							
<b>WG3147207-11</b>	<b>DUP</b>	<b>L2336834-6</b>						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3147207-10</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			105.3		%		80-120	30-AUG-19
<b>WG3147207-9</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	30-AUG-19
<b>WG3147207-12</b>	<b>MS</b>	<b>L2336834-6</b>						
Phosphorus (P)-Total Dissolved			99.0		%		70-130	30-AUG-19
<b>PH-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 11 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4776509							
WG3146976-11	LCS							
pH			7.02		pH		6.9-7.1	28-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4770114							
WG3144974-10	LCS							
Orthophosphate-Dissolved (as P)			101.7		%		80-120	27-AUG-19
WG3144974-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-AUG-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4771350							
WG3145701-10	LCS							
Sulfate (SO4)			99.8		%		90-110	27-AUG-19
WG3145701-6	LCS							
Sulfate (SO4)			100.0		%		90-110	27-AUG-19
WG3145701-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-AUG-19
WG3145701-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	27-AUG-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4778550							
WG3147680-9	DUP	L2336834-1						
Total Dissolved Solids		355	355		mg/L	0.0	20	29-AUG-19
WG3147680-11	LCS							
Total Dissolved Solids			96.5		%		85-115	29-AUG-19
WG3147680-8	LCS							
Total Dissolved Solids			93.1		%		85-115	29-AUG-19
WG3147680-10	MB							
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
WG3147680-7	MB							
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4778448							
WG3148809-10	LCS							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
WG3148809-13	LCS							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
WG3148809-16	LCS							



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 12 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778448</b>							
<b>WG3148809-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-24</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-27</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
<b>WG3148809-31</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778584</b>							
<b>WG3147082-8</b>	<b>LCS</b>							
Total Suspended Solids			104.0		%		85-115	29-AUG-19
<b>WG3147082-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-AUG-19



## Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 13 of 15

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4774369</b>							
<b>WG3146164-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	28-AUG-19
<b>WG3146164-5</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	28-AUG-19
<b>WG3146164-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-AUG-19
<b>WG3146164-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-AUG-19

# Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 14 of 15

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2336834

Report Date: 06-SEP-19

Page 15 of 15

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	26-AUG-19 10:25	28-AUG-19 15:30	0.25	53	hours	EHTR-FM
	2	26-AUG-19 10:05	28-AUG-19 15:30	0.25	54	hours	EHTR-FM
	3	26-AUG-19 11:55	28-AUG-19 15:30	0.25	52	hours	EHTR-FM
	4	26-AUG-19 10:10	28-AUG-19 15:30	0.25	53	hours	EHTR-FM
	5	26-AUG-19 10:15	28-AUG-19 15:30	0.25	53	hours	EHTR-FM
	6	26-AUG-19 10:20	28-AUG-19 15:30	0.25	53	hours	EHTR-FM
pH							
	1	26-AUG-19 10:25	28-AUG-19 11:00	0.25	48	hours	EHTR-FM
	2	26-AUG-19 10:05	28-AUG-19 11:00	0.25	49	hours	EHTR-FM
	3	26-AUG-19 11:55	28-AUG-19 11:00	0.25	47	hours	EHTR-FM
	4	26-AUG-19 10:10	28-AUG-19 11:00	0.25	49	hours	EHTR-FM
	5	26-AUG-19 10:15	28-AUG-19 11:00	0.25	49	hours	EHTR-FM
	6	26-AUG-19 10:20	28-AUG-19 11:00	0.25	49	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2336834 were received on 27-AUG-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190826Q3GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED																				
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	No	Yes	Yes	No	No	No	No	Yes		
EV_MW_GT1-A_WG_2019_Q3_NP	EV_MW_GT1-A	WG		8/26/2019	10:25	G	5	✓	✓	✓	✓	✓	✓	✓														
EV_MW_GT1-B_WG_2019_Q3_NP	EV_MW_GT1-B	WG		8/26/2019	10:05	G	5	✓	✓	✓	✓	✓	✓	✓														
EV_MW_AQ1_WG_2019-Q3_NP	EV_MW_AQ1	WG		8/26/2019	11:55	G	5	✓	✓	✓	✓	✓	✓	✓														
EV_EC5GW_WG_2019-08-26_NP	EV_EC5GW	WG		8/26/2019	10:10	G	5	✓	✓	✓	✓	✓	✓	✓														
EV_EC6GW_WG_2019-08-26_NP	EV_EC6GW	WG		8/26/2019	10:15	G	5	✓	✓	✓	✓	✓	✓	✓														
EV_EC7GW_WG_2019-08-26_NP	EV_EC7GW	WG		8/26/2019	10:20	G	5	✓	✓	✓	✓	✓	✓	✓														
							Total	30																				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_EC7GW - dissolved samples were not filtered or persevered.	Kimberley Hackett	August 26, 2019	<i>DK</i>	<i>8/27 0850</i>

SERVICE REQUEST (rush subject to availability)			
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Kimberley Hackett	Mobile #	
Sampler's Signature	<i>Kimberley Hackett</i>	Date/Time	August 26, 2019

4°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 28-AUG-19  
Report Date: 04-SEP-19 11:57 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2337586  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190827Q3POT  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2337586-1 WG 27-AUG-19 14:45 EV_BRGW_WG_2 019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	1210			
	Hardness (as CaCO3) (mg/L)	655			
	pH (pH)	8.01			
	ORP (mV)	443			
	Total Suspended Solids (mg/L)	1.9			
	Total Dissolved Solids (mg/L)	868	DLHC		
	Turbidity (NTU)	1.02			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	19.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	271			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	271			
	Ammonia as N (mg/L)	0.0135			
	Bromide (Br) (mg/L)	0.85	DLDS		
	Chloride (Cl) (mg/L)	34.9	DLDS		
	Fluoride (F) (mg/L)	0.14	DLDS		
	Ion Balance (%)	92.2			
	Nitrate (as N) (mg/L)	5.72	DLDS		
	Nitrite (as N) (mg/L)	0.0076	DLDS		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	5.73			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0023			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	376	DLDS		
	Anion Sum (meq/L)	14.6			
	Cation Sum (meq/L)	13.5			
	Cation - Anion Balance (%)	-4.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.76			
	Total Organic Carbon (mg/L)	0.76			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2337586-1 WG 27-AUG-19 14:45 EV_BRGW_WG_2 019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0639			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.040			
	Cadmium (Cd)-Dissolved (ug/L)	0.0537			
	Calcium (Ca)-Dissolved (mg/L)	170			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0504			
	Magnesium (Mg)-Dissolved (mg/L)	55.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00963			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000605			
	Nickel (Ni)-Dissolved (mg/L)	0.00153			
	Potassium (K)-Dissolved (mg/L)	2.12			
	Selenium (Se)-Dissolved (ug/L)	38.3			
	Silicon (Si)-Dissolved (mg/L)	3.27			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	8.31			
	Strontium (Sr)-Dissolved (mg/L)	0.352			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00182			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0038			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2337586-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2337586-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2337586-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2337586-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2337586-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2337586-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2337586-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2337586-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2337586-1
Matrix Spike	Nitrate (as N)	MS-B	L2337586-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water              Sulfate in Water by IC    EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water              Total Dissolved Solids    APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**              Water              Ion Balance Calculation    APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190827Q3POT

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4776550							
<b>WG3146870-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.3		%		85-115	28-AUG-19
<b>WG3146870-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	28-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	28-AUG-19
<b>WG3146976-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4777995							
<b>WG3147860-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4778110							
<b>WG3148464-7</b>	<b>DUP</b>	<b>L2337586-1</b>						
Dissolved Organic Carbon		0.76	0.79		mg/L	3.7	20	29-AUG-19
<b>WG3148464-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			99.4		%		80-120	29-AUG-19
<b>WG3148464-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-AUG-19
<b>WG3148464-8</b>	<b>MS</b>	<b>L2337586-1</b>						
Dissolved Organic Carbon			98.0		%		70-130	29-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4778110							
<b>WG3148464-7</b>	<b>DUP</b>	<b>L2337586-1</b>						
Total Organic Carbon		0.76	0.62		mg/L	20	20	29-AUG-19
<b>WG3148464-6</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch	R4778110							
<b>WG3148464-6</b>	<b>LCS</b>							
Total Organic Carbon			105.4		%		80-120	29-AUG-19
<b>WG3148464-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-AUG-19
<b>WG3148464-8</b>	<b>MS</b>	<b>L2337586-1</b>						
Total Organic Carbon			104.6		%		70-130	29-AUG-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Chloride (Cl)			98.4		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-AUG-19
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
Batch	R4773750							
<b>WG3146168-3</b>	<b>DUP</b>	<b>L2337586-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	28-AUG-19
<b>WG3146168-2</b>	<b>LCS</b>							
Colour, True			106.2		%		85-115	28-AUG-19
<b>WG3146168-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	28-AUG-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	28-AUG-19
<b>WG3146976-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Fluoride (F)			104.0		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4782133							
<b>WG3150298-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-SEP-19
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-SEP-19



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.6		%		80-120	30-AUG-19
Antimony (Sb)-Dissolved			91.1		%		80-120	30-AUG-19
Arsenic (As)-Dissolved			96.7		%		80-120	30-AUG-19
Barium (Ba)-Dissolved			101.7		%		80-120	30-AUG-19
Bismuth (Bi)-Dissolved			100.1		%		80-120	30-AUG-19
Boron (B)-Dissolved			96.0		%		80-120	30-AUG-19
Cadmium (Cd)-Dissolved			98.8		%		80-120	30-AUG-19
Calcium (Ca)-Dissolved			99.4		%		80-120	30-AUG-19
Chromium (Cr)-Dissolved			102.0		%		80-120	30-AUG-19
Cobalt (Co)-Dissolved			100.4		%		80-120	30-AUG-19
Copper (Cu)-Dissolved			95.7		%		80-120	30-AUG-19
Iron (Fe)-Dissolved			99.6		%		80-120	30-AUG-19
Lead (Pb)-Dissolved			101.6		%		80-120	30-AUG-19
Lithium (Li)-Dissolved			101.0		%		80-120	30-AUG-19
Magnesium (Mg)-Dissolved			96.8		%		80-120	30-AUG-19
Manganese (Mn)-Dissolved			100.0		%		80-120	30-AUG-19
Molybdenum (Mo)-Dissolved			98.3		%		80-120	30-AUG-19
Nickel (Ni)-Dissolved			97.7		%		80-120	30-AUG-19
Potassium (K)-Dissolved			100.3		%		80-120	30-AUG-19
Selenium (Se)-Dissolved			100.4		%		80-120	30-AUG-19
Silicon (Si)-Dissolved			103.3		%		60-140	30-AUG-19
Silver (Ag)-Dissolved			95.9		%		80-120	30-AUG-19
Sodium (Na)-Dissolved			100.5		%		80-120	30-AUG-19
Strontium (Sr)-Dissolved			99.1		%		80-120	30-AUG-19
Thallium (Tl)-Dissolved			99.7		%		80-120	30-AUG-19
Tin (Sn)-Dissolved			96.6		%		80-120	30-AUG-19
Titanium (Ti)-Dissolved			93.8		%		80-120	30-AUG-19
Uranium (U)-Dissolved			107.2		%		80-120	30-AUG-19
Vanadium (V)-Dissolved			101.2		%		80-120	30-AUG-19
Zinc (Zn)-Dissolved			99.3		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778417</b>							
<b>WG3147579-18</b>	<b>LCS</b>							
Ammonia as N			103.0		%		85-115	29-AUG-19
<b>WG3147579-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Nitrite (as N)			99.5		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-AUG-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Nitrate (as N)			98.7		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4777724							
<b>WG3147832-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			229		mV		210-230	29-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4778432							
<b>WG3147207-24</b>	<b>DUP</b>	<b>L2337586-1</b>						
Phosphorus (P)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	01-SEP-19
<b>WG3147207-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.2		%		80-120	01-SEP-19
<b>WG3147207-21</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-SEP-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4778432							
<b>WG3147207-24</b>	<b>DUP</b>	<b>L2337586-1</b>						
Phosphorus (P)-Total Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	01-SEP-19
<b>WG3147207-22</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			106.2		%		80-120	01-SEP-19
<b>WG3147207-21</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	01-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	28-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778146</b>							
<b>WG3147483-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			93.9		%		80-120	29-AUG-19
<b>WG3147483-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-AUG-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777583</b>							
<b>WG3147678-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.1		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	28-AUG-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778550</b>							
<b>WG3147680-12</b>	<b>DUP</b>	<b>L2337586-1</b>						
Total Dissolved Solids		868	853		mg/L	1.7	20	29-AUG-19
<b>WG3147680-11</b>	<b>LCS</b>							
Total Dissolved Solids			96.5		%		85-115	29-AUG-19
<b>WG3147680-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4779015</b>							
<b>WG3149449-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.4		%		75-125	31-AUG-19
<b>WG3149449-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	31-AUG-19
<b>WG3149449-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.3		%		75-125	31-AUG-19
<b>WG3149449-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.8		%		75-125	31-AUG-19
<b>WG3149449-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19



## Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4779015</b>							
<b>WG3149449-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4778584</b>							
<b>WG3147082-10</b>	<b>LCS</b>							
Total Suspended Solids			105.9		%		85-115	29-AUG-19
<b>WG3147082-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	29-AUG-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4774369</b>							
<b>WG3146164-14</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	28-AUG-19
<b>WG3146164-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	28-AUG-19

# Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2337586

Report Date: 04-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-AUG-19 14:45	29-AUG-19 15:35	0.25	49	hours	EHTR-FM
pH	1	27-AUG-19 14:45	28-AUG-19 11:00	0.25	20	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2337586 were received on 28-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190827Q3POT**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudnyla Shvets			Email 1:	kimberley.hackett@teck.com			
Project Manager	Cameron Griffin			Email	lyudnyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com			
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdonn@teck.com			
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com			
								Email 5:	teckcoal@equilonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED												
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (ALPHA 5310)	Dissolved Phosphorus	TKN/TOC (ALPHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_BRgw_WG_2019_Q3_NP	EV_BRgw	WG		8/27/2019	14:45	G	5	1		1	1		1					1		
							Total	5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	August 27, 2019	<i>DK</i>	8/28 0900

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	X	Kimberley Hackett	
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			
		Sampler's Signature	Date/Time
		<i>Kimberley Hackett</i>	August 27, 2019

900



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 28-AUG-19  
Report Date: 04-SEP-19 12:00 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2337621  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190827Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2337621-1 WG 27-AUG-19 11:45 EV_MW_MC4_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	889			
	Hardness (as CaCO3) (mg/L)	469			
	pH (pH)	8.03			
	ORP (mV)	299			
	Total Suspended Solids (mg/L)	2.4			
	Total Dissolved Solids (mg/L)	553	DLHC		
	Turbidity (NTU)	4.99			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	25.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	350			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	350			
	Ammonia as N (mg/L)	0.0075			
	Bromide (Br) (mg/L)	0.175			
	Chloride (Cl) (mg/L)	30.9			
	Fluoride (F) (mg/L)	0.218			
	Ion Balance (%)	95.7			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	<0.050			
	Total Nitrogen (mg/L)	<0.050			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0025			
	Phosphorus (P)-Total (mg/L)	0.0030			
	Sulfate (SO4) (mg/L)	113			
	Anion Sum (meq/L)	10.2			
	Cation Sum (meq/L)	9.79			
	Cation - Anion Balance (%)	-2.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.94	DTC		
	Total Organic Carbon (mg/L)	1.22	DTC		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0056			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00051			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2337621-1 WG 27-AUG-19 11:45 EV_MW_MC4_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.111			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.038			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	127			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.48			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.361			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0218			
	Magnesium (Mg)-Dissolved (mg/L)	36.8			
	Manganese (Mn)-Dissolved (mg/L)	0.0695			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00338			
	Nickel (Ni)-Dissolved (mg/L)	0.00253			
	Potassium (K)-Dissolved (mg/L)	2.29			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	5.04			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.78			
	Strontium (Sr)-Dissolved (mg/L)	0.628			
	Thallium (Tl)-Dissolved (mg/L)	0.000015			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00151			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0034			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2337621-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2337621-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2337621-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2337621-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2337621-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2337621-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2337621-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2337621-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2337621-1
Matrix Spike	Nitrate (as N)	MS-B	L2337621-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water              Sulfate in Water by IC    EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water              Total Dissolved Solids    APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**              Water              Ion Balance Calculation    APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190827Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4776550							
<b>WG3146870-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.3		%		85-115	28-AUG-19
<b>WG3146870-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	28-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.1		%		85-115	28-AUG-19
<b>WG3146976-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4777995							
<b>WG3147860-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	28-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4778110							
<b>WG3148464-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.5		%		80-120	29-AUG-19
<b>WG3148464-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4778110							
<b>WG3148464-2</b>	<b>LCS</b>							
Total Organic Carbon			104.8		%		80-120	29-AUG-19
<b>WG3148464-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Chloride (Cl)			98.4		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	28-AUG-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4773750							
<b>WG3146168-2</b>	<b>LCS</b>							
Colour, True			106.2		%		85-115	28-AUG-19
<b>WG3146168-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	28-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.7		%		90-110	28-AUG-19
<b>WG3146976-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Fluoride (F)			104.0		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	28-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4782133							
<b>WG3150298-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-SEP-19
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-SEP-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4777995							
<b>WG3147860-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.6		%		80-120	30-AUG-19
Antimony (Sb)-Dissolved			91.1		%		80-120	30-AUG-19
Arsenic (As)-Dissolved			96.7		%		80-120	30-AUG-19
Barium (Ba)-Dissolved			101.7		%		80-120	30-AUG-19
Bismuth (Bi)-Dissolved			100.1		%		80-120	30-AUG-19
Boron (B)-Dissolved			96.0		%		80-120	30-AUG-19



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			98.8		%		80-120	30-AUG-19
Calcium (Ca)-Dissolved			99.4		%		80-120	30-AUG-19
Chromium (Cr)-Dissolved			102.0		%		80-120	30-AUG-19
Cobalt (Co)-Dissolved			100.4		%		80-120	30-AUG-19
Copper (Cu)-Dissolved			95.7		%		80-120	30-AUG-19
Iron (Fe)-Dissolved			99.6		%		80-120	30-AUG-19
Lead (Pb)-Dissolved			101.6		%		80-120	30-AUG-19
Lithium (Li)-Dissolved			101.0		%		80-120	30-AUG-19
Magnesium (Mg)-Dissolved			96.8		%		80-120	30-AUG-19
Manganese (Mn)-Dissolved			100.0		%		80-120	30-AUG-19
Molybdenum (Mo)-Dissolved			98.3		%		80-120	30-AUG-19
Nickel (Ni)-Dissolved			97.7		%		80-120	30-AUG-19
Potassium (K)-Dissolved			100.3		%		80-120	30-AUG-19
Selenium (Se)-Dissolved			100.4		%		80-120	30-AUG-19
Silicon (Si)-Dissolved			103.3		%		60-140	30-AUG-19
Silver (Ag)-Dissolved			95.9		%		80-120	30-AUG-19
Sodium (Na)-Dissolved			100.5		%		80-120	30-AUG-19
Strontium (Sr)-Dissolved			99.1		%		80-120	30-AUG-19
Thallium (Tl)-Dissolved			99.7		%		80-120	30-AUG-19
Tin (Sn)-Dissolved			96.6		%		80-120	30-AUG-19
Titanium (Ti)-Dissolved			93.8		%		80-120	30-AUG-19
Uranium (U)-Dissolved			107.2		%		80-120	30-AUG-19
Vanadium (V)-Dissolved			101.2		%		80-120	30-AUG-19
Zinc (Zn)-Dissolved			99.3		%		80-120	30-AUG-19
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777995</b>							
<b>WG3147860-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778417</b>							
<b>WG3147579-18</b>	<b>LCS</b>							
Ammonia as N			103.0		%		85-115	29-AUG-19
<b>WG3147579-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4777583</b>							
<b>WG3147678-6</b>	<b>LCS</b>							
Nitrite (as N)			99.5		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	28-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Nitrate (as N)			98.7		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	28-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4777724							
<b>WG3147832-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			229		mV		210-230	29-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4778432							
<b>WG3147207-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.4		%		80-120	30-AUG-19
<b>WG3147207-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	30-AUG-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4778432							
<b>WG3147207-18</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			104.4		%		80-120	30-AUG-19
<b>WG3147207-17</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	30-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4776509							
<b>WG3146976-14</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	28-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4778146							
<b>WG3147483-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			93.9		%		80-120	29-AUG-19
<b>WG3147483-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.1		%		90-110	28-AUG-19
<b>WG3147678-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4777583							
<b>WG3147678-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	28-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4778550							
<b>WG3147680-11 LCS</b>								
Total Dissolved Solids			96.5		%		85-115	29-AUG-19
<b>WG3147680-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	29-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4779015							
<b>WG3149449-10 LCS</b>								
Total Kjeldahl Nitrogen			91.4		%		75-125	31-AUG-19
<b>WG3149449-14 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	31-AUG-19
<b>WG3149449-18 LCS</b>								
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-2 LCS</b>								
Total Kjeldahl Nitrogen			92.3		%		75-125	31-AUG-19
<b>WG3149449-22 LCS</b>								
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-6 LCS</b>								
Total Kjeldahl Nitrogen			91.8		%		75-125	31-AUG-19
<b>WG3149449-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4778584							
<b>WG3147082-10 LCS</b>								
Total Suspended Solids			105.9		%		85-115	29-AUG-19
<b>WG3147082-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	29-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4774369							
<b>WG3146164-14 LCS</b>								
Turbidity			94.5		%		85-115	28-AUG-19
<b>WG3146164-13 MB</b>								
Turbidity			<0.10		NTU		0.1	28-AUG-19

# Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2337621

Report Date: 04-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-AUG-19 11:45	29-AUG-19 15:35	0.25	52	hours	EHTR-FM
pH	1	27-AUG-19 11:45	28-AUG-19 11:00	0.25	23	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2337621 were received on 28-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190827Q3GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	True Colour	TECK COAL-MET.D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury
EV_MW_MC4_WG_2019_Q3_NP	EV_MW_MC4	WG		8/27/2019	11:45	G	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total							5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_EC7GW - dissolved samples were not filtered or persevered.	Kimberley Hackett	August 26, 2019	<i>[Signature]</i>	8/28 <i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	August 26, 2019

*902*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 29-AUG-19  
Report Date: 03-SEP-19 17:29 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2338388  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190828Q3GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2338388-1 WG 28-AUG-19 09:45 EV_WF_SW_WG_ 2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	351			
	Hardness (as CaCO3) (mg/L)	165			
	pH (pH)	8.07			
	ORP (mV)	471			
	Total Suspended Solids (mg/L)	15.3			
	Total Dissolved Solids (mg/L)	212 <sup>DLHC</sup>			
	Turbidity (NTU)	14.2			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	31.9			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	31.9			
	Ammonia as N (mg/L)	0.227			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	2.51			
	Fluoride (F) (mg/L)	0.046			
	Ion Balance (%)	104			
	Nitrate (as N) (mg/L)	0.0145			
	Nitrite (as N) (mg/L)	0.0129			
	Total Kjeldahl Nitrogen (mg/L)	0.418			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0039			
	Phosphorus (P)-Total (mg/L)	0.0101			
	Sulfate (SO4) (mg/L)	132			
	Anion Sum (meq/L)	3.46			
	Cation Sum (meq/L)	3.60			
	Cation - Anion Balance (%)	2.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.27			
	Total Organic Carbon (mg/L)	2.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00014			
	Barium (Ba)-Dissolved (mg/L)	0.00597			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2338388-1 WG 28-AUG-19 09:45 EV_WF_SW_WG_ 2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	11.0			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0079			
	Magnesium (Mg)-Dissolved (mg/L)	33.4			
	Manganese (Mn)-Dissolved (mg/L)	0.0680			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000623			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.70			
	Selenium (Se)-Dissolved (ug/L)	0.077			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.04			
	Strontium (Sr)-Dissolved (mg/L)	0.00733			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00015			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2338388-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2338388-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2338388-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2338388-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2338388-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2338388-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2338388-1
Matrix Spike	Sulfate (SO4)	MS-B	L2338388-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NH2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NH3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20190828Q3GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4779479							
<b>WG3149669-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.8		%		85-115	30-AUG-19
<b>WG3149669-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	30-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4779469							
<b>WG3149661-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	30-AUG-19
<b>WG3149661-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4778896							
<b>WG3149226-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.7		%		80-120	31-AUG-19
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4781987							
<b>WG3150603-11</b>	<b>DUP</b>	<b>L2338388-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3150603-10</b>	<b>LCS</b>							
Bromide (Br)			101.7		%		85-115	30-AUG-19
<b>WG3150603-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-AUG-19
<b>WG3150603-12</b>	<b>MS</b>	<b>L2338388-1</b>						
Bromide (Br)			105.4		%		75-125	30-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4779480							
<b>WG3149829-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.9		%		80-120	30-AUG-19
<b>WG3149829-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
<b>WG3149829-4</b>	<b>MS</b>	<b>L2338388-1</b>						
Dissolved Organic Carbon			106.6		%		70-130	30-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch R4779480								
WG3149829-2	LCS							
Total Organic Carbon			113.1		%		80-120	30-AUG-19
WG3149829-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
WG3149829-4	MS	L2338388-1						
Total Organic Carbon			109.4		%		70-130	30-AUG-19
<b>CL-IC-N-CL</b>								
Batch R4781987								
WG3150603-11	DUP	L2338388-1						
Chloride (Cl)			2.51		mg/L	0.1	20	30-AUG-19
WG3150603-10	LCS							
Chloride (Cl)			101.1		%		90-110	30-AUG-19
WG3150603-9	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-AUG-19
WG3150603-12	MS	L2338388-1						
Chloride (Cl)			107.0		%		75-125	30-AUG-19
<b>COLOUR-TRUE-CL</b>								
Batch R4778018								
WG3147741-3	DUP	L2338388-1						
Colour, True			<5.0	RPD-NA	CU	N/A	20	30-AUG-19
WG3147741-2	LCS							
Colour, True			106.6		%		85-115	30-AUG-19
WG3147741-1	MB							
Colour, True			<5.0		CU		5	30-AUG-19
<b>EC-L-PCT-CL</b>								
Batch R4779469								
WG3149661-5	LCS							
Conductivity (@ 25C)			99.7		%		90-110	30-AUG-19
WG3149661-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-AUG-19
<b>F-IC-N-CL</b>								
Batch R4781987								
WG3150603-11	DUP	L2338388-1						
Fluoride (F)			0.046		mg/L	3.1	20	30-AUG-19
WG3150603-10	LCS							
Fluoride (F)			100.5		%		90-110	30-AUG-19
WG3150603-9	MB							



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4781987</b>							
<b>WG3150603-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-AUG-19
<b>WG3150603-12</b>	<b>MS</b>	<b>L2338388-1</b>						
Fluoride (F)			104.1		%		75-125	30-AUG-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778864</b>							
<b>WG3149222-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.8		%		80-120	31-AUG-19
<b>WG3149222-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	31-AUG-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.0		%		80-120	31-AUG-19
Antimony (Sb)-Dissolved			102.2		%		80-120	31-AUG-19
Arsenic (As)-Dissolved			102.5		%		80-120	31-AUG-19
Barium (Ba)-Dissolved			100.8		%		80-120	31-AUG-19
Bismuth (Bi)-Dissolved			97.4		%		80-120	31-AUG-19
Boron (B)-Dissolved			110.5		%		80-120	31-AUG-19
Cadmium (Cd)-Dissolved			102.7		%		80-120	31-AUG-19
Calcium (Ca)-Dissolved			104.4		%		80-120	31-AUG-19
Chromium (Cr)-Dissolved			106.3		%		80-120	31-AUG-19
Cobalt (Co)-Dissolved			102.7		%		80-120	31-AUG-19
Copper (Cu)-Dissolved			102.4		%		80-120	31-AUG-19
Iron (Fe)-Dissolved			101.3		%		80-120	31-AUG-19
Lead (Pb)-Dissolved			99.6		%		80-120	31-AUG-19
Lithium (Li)-Dissolved			100.1		%		80-120	31-AUG-19
Magnesium (Mg)-Dissolved			111.5		%		80-120	31-AUG-19
Manganese (Mn)-Dissolved			103.7		%		80-120	31-AUG-19
Molybdenum (Mo)-Dissolved			102.8		%		80-120	31-AUG-19
Nickel (Ni)-Dissolved			101.8		%		80-120	31-AUG-19
Potassium (K)-Dissolved			99.3		%		80-120	31-AUG-19
Selenium (Se)-Dissolved			105.8		%		80-120	31-AUG-19
Silicon (Si)-Dissolved			108.1		%		60-140	31-AUG-19
Silver (Ag)-Dissolved			99.3		%		80-120	31-AUG-19
Sodium (Na)-Dissolved			112.4		%		80-120	31-AUG-19



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			102.3		%		80-120	31-AUG-19
Thallium (Tl)-Dissolved			99.1		%		80-120	31-AUG-19
Tin (Sn)-Dissolved			102.1		%		80-120	31-AUG-19
Titanium (Ti)-Dissolved			99.2		%		80-120	31-AUG-19
Uranium (U)-Dissolved			94.8		%		80-120	31-AUG-19
Vanadium (V)-Dissolved			104.2		%		80-120	31-AUG-19
Zinc (Zn)-Dissolved			103.8		%		80-120	31-AUG-19
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-AUG-19



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778896</b>							
<b>WG3149226-1</b>	<b>MB</b>	<b>NP</b>						
	Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	31-AUG-19
	Uranium (U)-Dissolved		<0.000010		mg/L		0.00001	31-AUG-19
	Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	31-AUG-19
	Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	31-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782035</b>							
<b>WG3148808-18</b>	<b>LCS</b>							
	Ammonia as N		106.2		%		85-115	30-AUG-19
<b>WG3148808-17</b>	<b>MB</b>							
	Ammonia as N		<0.0050		mg/L		0.005	30-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4781987</b>							
<b>WG3150603-11</b>	<b>DUP</b>	<b>L2338388-1</b>						
	Nitrite (as N)	0.0129	0.0128		mg/L	0.8	20	30-AUG-19
<b>WG3150603-10</b>	<b>LCS</b>							
	Nitrite (as N)		101.0		%		90-110	30-AUG-19
<b>WG3150603-9</b>	<b>MB</b>							
	Nitrite (as N)		<0.0010		mg/L		0.001	30-AUG-19
<b>WG3150603-12</b>	<b>MS</b>	<b>L2338388-1</b>						
	Nitrite (as N)		108.5		%		75-125	30-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4781987</b>							
<b>WG3150603-11</b>	<b>DUP</b>	<b>L2338388-1</b>						
	Nitrate (as N)	0.0145	0.0145		mg/L	0.0	20	30-AUG-19
<b>WG3150603-10</b>	<b>LCS</b>							
	Nitrate (as N)		102.0		%		90-110	30-AUG-19
<b>WG3150603-9</b>	<b>MB</b>							
	Nitrate (as N)		<0.0050		mg/L		0.005	30-AUG-19
<b>WG3150603-12</b>	<b>MS</b>	<b>L2338388-1</b>						
	Nitrate (as N)		108.1		%		75-125	30-AUG-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778885</b>							
<b>WG3149149-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
	ORP		224		mV		210-230	30-AUG-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4782095							
<b>WG3150644-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.6		%		80-120	03-SEP-19
<b>WG3150644-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-SEP-19
<b>P-TD-L-COL-CL</b> <b>Water</b>								
Batch	R4782095							
<b>WG3150644-10</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			107.6		%		80-120	03-SEP-19
<b>WG3150644-9</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	03-SEP-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4779469							
<b>WG3149661-5</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	30-AUG-19
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4778146							
<b>WG3147483-31</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			95.0		%		80-120	29-AUG-19
<b>WG3147483-8</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-AUG-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4781987							
<b>WG3150603-11</b>	<b>DUP</b>	<b>L2338388-1</b>						
Sulfate (SO4)		132	132		mg/L	0.0	20	30-AUG-19
<b>WG3150603-10</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	30-AUG-19
<b>WG3150603-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-AUG-19
<b>WG3150603-12</b>	<b>MS</b>	<b>L2338388-1</b>						
Sulfate (SO4)			N/A	MS-B	%		-	30-AUG-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4781728							
<b>WG3149851-8</b>	<b>LCS</b>							
Total Dissolved Solids			95.1		%		85-115	01-SEP-19
<b>WG3149851-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-SEP-19



## Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4779015</b>							
<b>WG3149449-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.4		%		75-125	31-AUG-19
<b>WG3149449-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.0		%		75-125	31-AUG-19
<b>WG3149449-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.3		%		75-125	31-AUG-19
<b>WG3149449-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.6		%		75-125	31-AUG-19
<b>WG3149449-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.8		%		75-125	31-AUG-19
<b>WG3149449-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>WG3149449-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-AUG-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4781854</b>							
<b>WG3149790-2</b>	<b>LCS</b>							
Total Suspended Solids			86.6		%		85-115	01-SEP-19
<b>WG3149790-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-SEP-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4777726</b>							
<b>WG3147836-8</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	29-AUG-19
<b>WG3147836-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-AUG-19

# Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2338388

Report Date: 03-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-AUG-19 09:45	30-AUG-19 09:30	0.25	48	hours	EHTR-FM
pH	1	28-AUG-19 09:45	30-AUG-19 12:00	0.25	50	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2338388 were received on 29-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 20190828Q3GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852				

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	Sodium Bisulphate	HCl	
EV_WF_SW_WG_2019_Q3_NP	EV_WF_SW	WG		8/28/2019	9:45	G	5															
Total							5															

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Jason Gravelle	August 28, 2019	<i>[Signature]</i>	8/29 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/> X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jason Gravelle		August 28, 2019

*[Handwritten Signature]*

*[Handwritten Initials]*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 10-SEP-19  
Report Date: 17-SEP-19 14:21 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2344333  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20190909Q3GW  
Legal Site Desc:

Comments: ADDITIONAL 17-SEP-19 13:52  
17-SEP-2019 Total Nitrogen result added.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2344333-1 WG 09-SEP-19 13:00 EV_MW_AQ2_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	14.7			
	Conductivity (@ 25C) (uS/cm)	1090			
	Hardness (as CaCO3) (mg/L)	589			
	pH (pH)	7.97			
	ORP (mV)	437			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	727 <sup>DLHC</sup>			
	Turbidity (NTU)	6.72			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	29.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	490			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	490			
	Ammonia as N (mg/L)	0.0532 <sup>DLHC</sup>			
	Bromide (Br) (mg/L)	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	14.2 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.18 <sup>DLHC</sup>			
	Ion Balance (%)	94.2 <sup>DLHC</sup>			
	Nitrate (as N) (mg/L)	<0.025 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	0.079			
	Total Nitrogen (mg/L)	0.079			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0018			
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020			
	Phosphorus (P)-Total (mg/L)	<0.0020 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	158			
	Anion Sum (meq/L)	13.5			
	Cation Sum (meq/L)	12.7			
	Cation - Anion Balance (%)	-3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.94			
	Total Organic Carbon (mg/L)	0.99			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00015			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2344333-1 WG 09-SEP-19 13:00 EV_MW_AQ2_WG _2019_Q3_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0181			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.099			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	138			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.601			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0575			
	Magnesium (Mg)-Dissolved (mg/L)	59.3			
	Manganese (Mn)-Dissolved (mg/L)	0.0699			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000894			
	Nickel (Ni)-Dissolved (mg/L)	0.00075			
	Potassium (K)-Dissolved (mg/L)	1.91			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	7.10			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	19.7			
	Strontium (Sr)-Dissolved (mg/L)	1.18			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000105			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Total Organic Carbon	MS-B	L2344333-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2344333-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2344333-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2344333-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2344333-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2344333-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2344333-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2344333-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2344333-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2344333-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2344333-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water                      Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water                      Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water                      Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL**                      Water                      Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water                      Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water                      Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20190909Q3GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4801069							
<b>WG3159412-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	11-SEP-19
<b>WG3159412-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	11-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4800936							
<b>WG3159420-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	11-SEP-19
<b>WG3159420-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4806483							
<b>WG3160457-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	13-SEP-19
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-6</b>	<b>LCS</b>							
Bromide (Br)			101.6		%		85-115	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4801311							
<b>WG3159683-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.3		%		80-120	11-SEP-19
<b>WG3159683-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	11-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4801311							
<b>WG3159683-6</b>	<b>LCS</b>							
Total Organic Carbon			108.3		%		80-120	11-SEP-19
<b>WG3159683-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	11-SEP-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-6</b>	<b>LCS</b>							
Chloride (Cl)			98.5		%		90-110	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	10-SEP-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4800691							
<b>WG3157339-2</b>	<b>LCS</b>							
Colour, True			102.9		%		85-115	10-SEP-19
<b>WG3157339-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	10-SEP-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4800936							
<b>WG3159420-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.7		%		90-110	11-SEP-19
<b>WG3159420-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-6</b>	<b>LCS</b>							
Fluoride (F)			101.4		%		90-110	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-SEP-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4811610							
<b>WG3162861-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.4		%		80-120	16-SEP-19
<b>WG3162861-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-SEP-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4806483							
<b>WG3160457-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.3		%		80-120	13-SEP-19
Antimony (Sb)-Dissolved			100.1		%		80-120	13-SEP-19
Arsenic (As)-Dissolved			95.2		%		80-120	13-SEP-19
Barium (Ba)-Dissolved			96.2		%		80-120	13-SEP-19
Bismuth (Bi)-Dissolved			94.6		%		80-120	13-SEP-19
Boron (B)-Dissolved			97.1		%		80-120	13-SEP-19



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4806483</b>							
<b>WG3160457-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			98.4		%		80-120	13-SEP-19
Calcium (Ca)-Dissolved			97.7		%		80-120	13-SEP-19
Chromium (Cr)-Dissolved			96.3		%		80-120	13-SEP-19
Cobalt (Co)-Dissolved			96.9		%		80-120	13-SEP-19
Copper (Cu)-Dissolved			96.4		%		80-120	13-SEP-19
Iron (Fe)-Dissolved			94.5		%		80-120	13-SEP-19
Lead (Pb)-Dissolved			95.5		%		80-120	13-SEP-19
Lithium (Li)-Dissolved			99.6		%		80-120	13-SEP-19
Magnesium (Mg)-Dissolved			99.9		%		80-120	13-SEP-19
Manganese (Mn)-Dissolved			101.4		%		80-120	13-SEP-19
Molybdenum (Mo)-Dissolved			96.6		%		80-120	13-SEP-19
Nickel (Ni)-Dissolved			95.8		%		80-120	13-SEP-19
Potassium (K)-Dissolved			95.4		%		80-120	13-SEP-19
Selenium (Se)-Dissolved			94.5		%		80-120	13-SEP-19
Silicon (Si)-Dissolved			101.1		%		60-140	13-SEP-19
Silver (Ag)-Dissolved			93.6		%		80-120	13-SEP-19
Sodium (Na)-Dissolved			104.2		%		80-120	13-SEP-19
Strontium (Sr)-Dissolved			100.5		%		80-120	13-SEP-19
Thallium (Tl)-Dissolved			98.4		%		80-120	13-SEP-19
Tin (Sn)-Dissolved			95.5		%		80-120	13-SEP-19
Titanium (Ti)-Dissolved			95.6		%		80-120	13-SEP-19
Uranium (U)-Dissolved			96.0		%		80-120	13-SEP-19
Vanadium (V)-Dissolved			100.1		%		80-120	13-SEP-19
Zinc (Zn)-Dissolved			93.9		%		80-120	13-SEP-19
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4806483</b>							
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4807028</b>							
<b>WG3161717-10</b>	<b>LCS</b>							
Ammonia as N			108.6		%		85-115	13-SEP-19
<b>WG3161717-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-SEP-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4796951</b>							
<b>WG3158350-6</b>	<b>LCS</b>							
Nitrite (as N)			100.3		%		90-110	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-SEP-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-6</b>	<b>LCS</b>							
Nitrate (as N)			98.5		%		90-110	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4800709							
<b>WG3159014-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	11-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4798570							
<b>WG3158662-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			101.4		%		80-120	11-SEP-19
<b>WG3158662-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-SEP-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4798570							
<b>WG3158662-10</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			101.4		%		80-120	11-SEP-19
<b>WG3158662-9</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	11-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4800936							
<b>WG3159420-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	11-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4795230							
<b>WG3157448-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.9		%		80-120	10-SEP-19
<b>WG3157448-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-6</b>	<b>LCS</b>							
Sulfate (SO4)			98.3		%		90-110	10-SEP-19
<b>WG3158350-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4796951							
WG3158350-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	10-SEP-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4806330							
WG3160004-3	DUP	L2344333-1						
Total Dissolved Solids		727	733		mg/L	0.8	20	12-SEP-19
WG3160004-2	LCS							
Total Dissolved Solids			100.0		%		85-115	12-SEP-19
WG3160004-1	MB							
Total Dissolved Solids			<10		mg/L		10	12-SEP-19
<b>TKN-L-F-CL</b>								
Batch	R4801170							
WG3159658-10	LCS							
Total Kjeldahl Nitrogen			101.4		%		75-125	12-SEP-19
WG3159658-11	LCS							
Total Kjeldahl Nitrogen			106.4		%		75-125	12-SEP-19
WG3159658-12	LCS							
Total Kjeldahl Nitrogen			101.1		%		75-125	12-SEP-19
WG3159658-13	LCS							
Total Kjeldahl Nitrogen			103.1		%		75-125	13-SEP-19
WG3159658-14	LCS							
Total Kjeldahl Nitrogen			100.9		%		75-125	13-SEP-19
WG3159658-16	LCS							
Total Kjeldahl Nitrogen			101.1		%		75-125	13-SEP-19
WG3159658-8	LCS							
Total Kjeldahl Nitrogen			99.5		%		75-125	12-SEP-19
WG3159658-9	LCS							
Total Kjeldahl Nitrogen			101.6		%		75-125	12-SEP-19
WG3159658-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
WG3159658-15	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
WG3159658-2	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
WG3159658-3	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
WG3159658-4	MB							



## Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4801170</b>							
<b>WG3159658-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-6</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
<b>WG3159658-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4807649</b>							
<b>WG3160658-4</b>	<b>LCS</b>							
Total Suspended Solids			90.7		%		85-115	13-SEP-19
<b>WG3160658-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-SEP-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4800912</b>							
<b>WG3159006-2</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	11-SEP-19
<b>WG3159006-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	11-SEP-19

# Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2344333

Report Date: 17-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	09-SEP-19 13:00	11-SEP-19 15:00	0.25	50	hours	EHTR-FM
pH	1	09-SEP-19 13:00	11-SEP-19 09:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2344333 were received on 10-SEP-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **20190909Q3GW** TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS							ANALYSIS REQUESTED														
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury		
EV_MW_AQ2_WG_2019_Q3_NP	EV_MW_AQ2	WG		9/9/2019	13:00	G	5	1		1	1		1					1			
Total							5														

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b> Kimberley Hackett	<b>DATE/TIME</b> September 9, 2019	<b>ACCEPTED BY/AFFILIATION</b> <i>[Signature]</i>	<b>DATE/TIME</b> 9/10/2019
---	---	---------------------------------------	--	-------------------------------

<b>SERVICE REQUEST (rush - subject to availability)</b> Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<b>Sampler's Name</b> Kimberley Hackett	<b>Mobile #</b> _____
<b>Sampler's Signature</b> <i>[Signature]</i>	<b>Date/Time</b> September 9, 2019	<b>Date/Time</b> _____

3



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 30-OCT-19  
Report Date: 05-NOV-19 17:05 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2374442  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191029  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2374442-1 WG 29-OCT-19 14:15 EV_RCSGW_WG_ 2019-Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	2100			
	Hardness (as CaCO3) (mg/L)	1740			
	pH (pH)	8.20			
	ORP (mV)	356			
	Total Suspended Solids (mg/L)	2.6			
	Total Dissolved Solids (mg/L)	2310	DLHC		
	Turbidity (NTU)	0.14			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	273			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	273			
	Ammonia as N (mg/L)	0.0090			
	Bromide (Br) (mg/L)	0.51	DLHC		
	Chloride (Cl) (mg/L)	14.4	DLHC		
	Fluoride (F) (mg/L)	0.20	DLHC		
	Ion Balance (%)	104			
	Nitrate (as N) (mg/L)	33.3	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	33.3			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0026			
	Phosphorus (P)-Total (mg/L)	0.0025			
	Sulfate (SO4) (mg/L)	1220	DLHC		
	Anion Sum (meq/L)	33.7			
	Cation Sum (meq/L)	35.2			
	Cation - Anion Balance (%)	2.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.02			
	Total Organic Carbon (mg/L)	2.39			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00020	DLA		
	Arsenic (As)-Dissolved (mg/L)	<0.00020	DLA		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>			
	L2374442-1 WG 29-OCT-19 14:15 EV_RCSGW_WG_ 2019-Q4_NP			
Grouping	Analyte			
<b>WATER</b>				
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0386		
	Beryllium (Be)-Dissolved (ug/L)	<0.040 <sup>DLA</sup>		
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>		
	Boron (B)-Dissolved (mg/L)	0.022		
	Cadmium (Cd)-Dissolved (ug/L)	0.278		
	Calcium (Ca)-Dissolved (mg/L)	378		
	Chromium (Cr)-Dissolved (mg/L)	0.00023		
	Cobalt (Co)-Dissolved (ug/L)	<0.20 <sup>DLA</sup>		
	Copper (Cu)-Dissolved (mg/L)	0.0654		
	Iron (Fe)-Dissolved (mg/L)	<0.020 <sup>DLA</sup>		
	Lead (Pb)-Dissolved (mg/L)	0.00023		
	Lithium (Li)-Dissolved (mg/L)	0.0902		
	Magnesium (Mg)-Dissolved (mg/L)	193		
	Manganese (Mn)-Dissolved (mg/L)	0.00124		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00131		
	Nickel (Ni)-Dissolved (mg/L)	0.0026		
	Potassium (K)-Dissolved (mg/L)	3.97		
	Selenium (Se)-Dissolved (ug/L)	251		
	Silicon (Si)-Dissolved (mg/L)	5.13		
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>		
	Sodium (Na)-Dissolved (mg/L)	7.33		
	Strontium (Sr)-Dissolved (mg/L)	0.446		
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 <sup>DLA</sup>		
	Tin (Sn)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>		
	Titanium (Ti)-Dissolved (mg/L)	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00748		
	Vanadium (V)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>		
	Zinc (Zn)-Dissolved (mg/L)	0.441		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			

## Reference Information

<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20191029

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4891686							
<b>WG3206876-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	30-OCT-19
<b>WG3206876-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	30-OCT-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4891346							
<b>WG3206836-20</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	30-OCT-19
<b>WG3206836-19</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4896060							
<b>WG3207361-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.2		%		80-120	01-NOV-19
<b>WG3207361-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4891394							
<b>WG3207085-10</b>	<b>LCS</b>							
Bromide (Br)			104.6		%		85-115	30-OCT-19
<b>WG3207085-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896797							
<b>WG3209588-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.4		%		80-120	03-NOV-19
<b>WG3209588-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896797							
<b>WG3209588-6</b>	<b>LCS</b>							
Total Organic Carbon			103.9		%		80-120	03-NOV-19
<b>WG3209588-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch R4891394								
WG3207085-10 LCS								
Chloride (Cl)			105.0		%		90-110	30-OCT-19
WG3207085-9 MB								
Chloride (Cl)			<0.50		mg/L		0.5	30-OCT-19
<b>COLOUR-TRUE-CL</b>								
<b>Water</b>								
Batch R4892991								
WG3206165-2 LCS								
Colour, True			104.2		%		85-115	30-OCT-19
WG3206165-1 MB								
Colour, True			<5.0		CU		5	30-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch R4891346								
WG3206836-20 LCS								
Conductivity (@ 25C)			95.4		%		90-110	30-OCT-19
WG3206836-19 MB								
Conductivity (@ 25C)			<2.0		uS/cm		2	30-OCT-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch R4891394								
WG3207085-10 LCS								
Fluoride (F)			98.2		%		90-110	30-OCT-19
WG3207085-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	30-OCT-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch R4896127								
WG3208244-10 LCS								
Mercury (Hg)-Dissolved			96.2		%		80-120	02-NOV-19
WG3208244-9 MB								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	02-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
Batch R4896060								
WG3207361-2 LCS								
Aluminum (Al)-Dissolved			95.7		%		80-120	01-NOV-19
Antimony (Sb)-Dissolved			91.3		%		80-120	01-NOV-19
Arsenic (As)-Dissolved			95.4		%		80-120	01-NOV-19
Barium (Ba)-Dissolved			103.8		%		80-120	01-NOV-19
Bismuth (Bi)-Dissolved			97.8		%		80-120	01-NOV-19
Boron (B)-Dissolved			96.7		%		80-120	01-NOV-19



## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896060</b>							
<b>WG3207361-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			93.5		%		80-120	01-NOV-19
Calcium (Ca)-Dissolved			98.5		%		80-120	01-NOV-19
Chromium (Cr)-Dissolved			95.6		%		80-120	01-NOV-19
Cobalt (Co)-Dissolved			96.8		%		80-120	01-NOV-19
Copper (Cu)-Dissolved			96.1		%		80-120	01-NOV-19
Iron (Fe)-Dissolved			95.5		%		80-120	01-NOV-19
Lead (Pb)-Dissolved			97.4		%		80-120	01-NOV-19
Lithium (Li)-Dissolved			97.1		%		80-120	01-NOV-19
Magnesium (Mg)-Dissolved			96.3		%		80-120	01-NOV-19
Manganese (Mn)-Dissolved			96.9		%		80-120	01-NOV-19
Molybdenum (Mo)-Dissolved			97.9		%		80-120	01-NOV-19
Nickel (Ni)-Dissolved			96.6		%		80-120	01-NOV-19
Potassium (K)-Dissolved			98.8		%		80-120	01-NOV-19
Selenium (Se)-Dissolved			93.3		%		80-120	01-NOV-19
Silicon (Si)-Dissolved			97.6		%		60-140	01-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	01-NOV-19
Sodium (Na)-Dissolved			101.1		%		80-120	01-NOV-19
Strontium (Sr)-Dissolved			96.9		%		80-120	01-NOV-19
Thallium (Tl)-Dissolved			98.3		%		80-120	01-NOV-19
Tin (Sn)-Dissolved			91.6		%		80-120	01-NOV-19
Titanium (Ti)-Dissolved			87.3		%		80-120	01-NOV-19
Uranium (U)-Dissolved			96.9		%		80-120	01-NOV-19
Vanadium (V)-Dissolved			98.2		%		80-120	01-NOV-19
Zinc (Zn)-Dissolved			98.4		%		80-120	01-NOV-19
<b>WG3207361-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19



## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896060</b>							
<b>WG3207361-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4898562</b>							
<b>WG3209139-6</b>	<b>LCS</b>							
Ammonia as N			100.6		%		85-115	02-NOV-19
<b>WG3209139-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	02-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4891394</b>							
<b>WG3207085-10</b>	<b>LCS</b>							
Nitrite (as N)			105.8		%		90-110	30-OCT-19
<b>WG3207085-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-OCT-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4891394							
<b>WG3207085-10 LCS</b>								
Nitrate (as N)			105.2		%		90-110	30-OCT-19
<b>WG3207085-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	30-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4891052							
<b>WG3206879-9 CRM</b>		<b>CL-ORP</b>						
ORP			223		mV		210-230	30-OCT-19
<b>WG3206879-10 DUP</b>		<b>L2374442-1</b>						
ORP		356	364	J	mV	7.8	15	30-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4891928							
<b>WG3207054-26 LCS</b>								
Phosphorus (P)-Total			105.6		%		80-120	31-OCT-19
<b>WG3207054-25 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-OCT-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4891928							
<b>WG3207054-26 LCS</b>								
Phosphorus (P)-Total Dissolved			105.6		%		80-120	31-OCT-19
<b>WG3207054-25 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	31-OCT-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4891346							
<b>WG3206836-20 LCS</b>								
pH			7.02		pH		6.9-7.1	30-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4890387							
<b>WG3206051-16 LCS</b>								
Orthophosphate-Dissolved (as P)			101.4		%		80-120	30-OCT-19
<b>WG3206051-15 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4891394							
<b>WG3207085-10</b>	<b>LCS</b>							
Sulfate (SO4)			103.2		%		90-110	30-OCT-19
<b>WG3207085-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-OCT-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4899012							
<b>WG3209631-2</b>	<b>LCS</b>							
Total Dissolved Solids			102.5		%		85-115	04-NOV-19
<b>WG3209631-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-NOV-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4891357							
<b>WG3206908-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.3		%		75-125	31-OCT-19
<b>WG3206908-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	31-OCT-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4898646							
<b>WG3209204-6</b>	<b>LCS</b>							
Total Suspended Solids			96.5		%		85-115	03-NOV-19
<b>WG3209204-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4891077							
<b>WG3206874-14</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	30-OCT-19
<b>WG3206874-13</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-OCT-19

# Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2374442

Report Date: 05-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	29-OCT-19 14:15	30-OCT-19 16:30	0.25	26	hours	EHTR-FM
pH	1	29-OCT-19 14:15	30-OCT-19 15:00	0.25	25	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2374442 were received on 30-OCT-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20191029Q4POF**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyndmyla Shivets			Email 1:	kimberley.hackett@teck.com X X X			
Project Manager	Cameron Griffin			Email	lyndmyla.shivets@alsglobal.com			Email 2:	cameron.griffin@teck.com X X X			
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com X X X			
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com X X X			
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Y/N)	Date	Time (24hr)	G=Cirah C=Comp	# Of Cont.	<small>Filtered - P: Field, L: Lab, PL: Field &amp; Lab, N: None</small> No Yes Yes No No No No Yes											
								TECKCOAL-ROUTINE-VA (I-305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APIA 5310)	Dissolved Phosphorus	TKN/TOC (APIA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury
EV_RCSgw_WG_2019_Q4_NP	EV_RCSgw	WG		10/29/2019	14:15	G	5	1	1	1	1						1		
Total								5											

Submitted By: Kimberley Hackett      Date/Time: October 29, 2019  
 Accepted By: M. P. [Signature]      Date/Time: 10/30 0850

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) X	Kimberley Hackett	[Signature]		October 29, 2019
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

30





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 31-OCT-19  
Report Date: 06-NOV-19 17:49 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2375009  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191030Q4GW  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2375009-1 WG 30-OCT-19 13:00 EV_ECGW_WG_2 019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	379			
	Hardness (as CaCO3) (mg/L)	165			
	pH (pH)	8.12			
	ORP (mV)	293			
	Total Suspended Solids (mg/L)	191			
	Total Dissolved Solids (mg/L)	267 <sup>DLHC</sup>			
	Turbidity (NTU)	185			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	224			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	224			
	Ammonia as N (mg/L)	0.125			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.59			
	Fluoride (F) (mg/L)	0.831			
	Ion Balance (%)	92.9			
	Nitrate (as N) (mg/L)	0.0618			
	Nitrite (as N) (mg/L)	0.0049			
	Total Kjeldahl Nitrogen (mg/L)	0.54 <sup>DLM</sup>			
	Total Nitrogen (mg/L)	0.61			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0118			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0484			
	Phosphorus (P)-Total (mg/L)	0.458 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	26.0			
	Anion Sum (meq/L)	5.09			
	Cation Sum (meq/L)	4.73			
	Cation - Anion Balance (%)	-3.7			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.99			
	Total Organic Carbon (mg/L)	2.87			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0039			
	Antimony (Sb)-Dissolved (mg/L)	0.00014			
	Arsenic (As)-Dissolved (mg/L)	0.00036			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2375009-1 WG 30-OCT-19 13:00 EV_ECGW_WG_2 019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0571			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.136			
	Cadmium (Cd)-Dissolved (ug/L)	0.0383			
	Calcium (Ca)-Dissolved (mg/L)	37.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.31			
	Copper (Cu)-Dissolved (mg/L)	0.00101			
	Iron (Fe)-Dissolved (mg/L)	0.012			
	Lead (Pb)-Dissolved (mg/L)	0.000161			
	Lithium (Li)-Dissolved (mg/L)	0.0115			
	Magnesium (Mg)-Dissolved (mg/L)	17.5			
	Manganese (Mn)-Dissolved (mg/L)	0.128			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0132			
	Nickel (Ni)-Dissolved (mg/L)	0.00353			
	Potassium (K)-Dissolved (mg/L)	1.62			
	Selenium (Se)-Dissolved (ug/L)	1.39			
	Silicon (Si)-Dissolved (mg/L)	4.55			
	Silver (Ag)-Dissolved (mg/L)	<0.000020 <sup>DLM</sup>			
	Sodium (Na)-Dissolved (mg/L)	31.9			
	Strontium (Sr)-Dissolved (mg/L)	0.395			
	Thallium (Tl)-Dissolved (mg/L)	0.000034			
	Tin (Sn)-Dissolved (mg/L)	0.00013			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00165			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0122			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2375009-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2375009-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2375009-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2375009-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2375009-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2375009-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2375009-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color
True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Weston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191030Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4895745							
<b>WG3208457-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	01-NOV-19
<b>WG3208457-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	01-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4895129							
<b>WG3207957-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.0		%		85-115	31-OCT-19
<b>WG3207957-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	31-OCT-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4897877							
<b>WG3209138-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-NOV-19
<b>WG3209138-4</b>	<b>MS</b>	<b>L2375009-1</b>						
Beryllium (Be)-Dissolved			91.6		%		70-130	03-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4896171							
<b>WG3208949-10</b>	<b>LCS</b>							
Bromide (Br)			104.6		%		85-115	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	31-OCT-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896761							
<b>WG3209597-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			117.7		%		80-120	03-NOV-19
<b>WG3209597-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896761							
<b>WG3209597-2</b>	<b>LCS</b>							
Total Organic Carbon			101.2		%		80-120	03-NOV-19
<b>WG3209597-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4896171</b>								
<b>WG3208949-10</b>	<b>LCS</b>							
Chloride (Cl)			106.7		%		90-110	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	31-OCT-19
<b>COLOUR-TRUE-CL</b>								
<b>Batch R4892909</b>								
<b>WG3207355-3</b>	<b>DUP</b>	<b>L2375009-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	31-OCT-19
<b>WG3207355-1</b>	<b>LCS</b>							
Colour, True			106.4		%		85-115	31-OCT-19
<b>WG3207355-2</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	31-OCT-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4895129</b>								
<b>WG3207957-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.8		%		90-110	31-OCT-19
<b>WG3207957-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	31-OCT-19
<b>F-IC-N-CL</b>								
<b>Batch R4896171</b>								
<b>WG3208949-10</b>	<b>LCS</b>							
Fluoride (F)			104.8		%		90-110	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	31-OCT-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4898478</b>								
<b>WG3209761-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.4		%		80-120	05-NOV-19
<b>WG3209761-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4897877</b>								
<b>WG3209138-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.5		%		80-120	03-NOV-19
Antimony (Sb)-Dissolved			92.9		%		80-120	03-NOV-19
Arsenic (As)-Dissolved			94.6		%		80-120	03-NOV-19
Barium (Ba)-Dissolved			103.6		%		80-120	03-NOV-19





## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			92.8		%		80-120	03-NOV-19
Boron (B)-Dissolved			98.9		%		80-120	03-NOV-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	03-NOV-19
Calcium (Ca)-Dissolved			100.5		%		80-120	03-NOV-19
Chromium (Cr)-Dissolved			94.3		%		80-120	03-NOV-19
Cobalt (Co)-Dissolved			96.2		%		80-120	03-NOV-19
Copper (Cu)-Dissolved			96.3		%		80-120	03-NOV-19
Iron (Fe)-Dissolved			96.7		%		80-120	03-NOV-19
Lead (Pb)-Dissolved			95.0		%		80-120	03-NOV-19
Lithium (Li)-Dissolved			99.8		%		80-120	03-NOV-19
Magnesium (Mg)-Dissolved			96.1		%		80-120	03-NOV-19
Manganese (Mn)-Dissolved			93.1		%		80-120	03-NOV-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	03-NOV-19
Nickel (Ni)-Dissolved			95.3		%		80-120	03-NOV-19
Potassium (K)-Dissolved			94.9		%		80-120	03-NOV-19
Selenium (Se)-Dissolved			103.8		%		80-120	03-NOV-19
Silicon (Si)-Dissolved			97.5		%		60-140	03-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	03-NOV-19
Sodium (Na)-Dissolved			97.3		%		80-120	03-NOV-19
Strontium (Sr)-Dissolved			94.1		%		80-120	03-NOV-19
Thallium (Tl)-Dissolved			97.2		%		80-120	03-NOV-19
Tin (Sn)-Dissolved			96.3		%		80-120	03-NOV-19
Titanium (Ti)-Dissolved			93.0		%		80-120	03-NOV-19
Uranium (U)-Dissolved			91.9		%		80-120	03-NOV-19
Vanadium (V)-Dissolved			96.4		%		80-120	03-NOV-19
Zinc (Zn)-Dissolved			94.8		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-NOV-19



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
<b>WG3209138-4</b>	<b>MS</b>	<b>L2375009-1</b>						
Aluminum (Al)-Dissolved			90.2		%		70-130	03-NOV-19
Antimony (Sb)-Dissolved			95.8		%		70-130	03-NOV-19
Arsenic (As)-Dissolved			93.3		%		70-130	03-NOV-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Bismuth (Bi)-Dissolved			88.9		%		70-130	03-NOV-19
Boron (B)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Cadmium (Cd)-Dissolved			93.9		%		70-130	03-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Chromium (Cr)-Dissolved			90.0		%		70-130	03-NOV-19
Cobalt (Co)-Dissolved			92.7		%		70-130	03-NOV-19



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-4</b>	<b>MS</b>	<b>L2375009-1</b>						
Copper (Cu)-Dissolved			91.8		%		70-130	03-NOV-19
Iron (Fe)-Dissolved			90.8		%		70-130	03-NOV-19
Lead (Pb)-Dissolved			93.4		%		70-130	03-NOV-19
Lithium (Li)-Dissolved			89.2		%		70-130	03-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Molybdenum (Mo)-Dissolved			93.7		%		70-130	03-NOV-19
Nickel (Ni)-Dissolved			89.4		%		70-130	03-NOV-19
Potassium (K)-Dissolved			85.8		%		70-130	03-NOV-19
Selenium (Se)-Dissolved			101.7		%		70-130	03-NOV-19
Silicon (Si)-Dissolved			81.2		%		70-130	03-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	03-NOV-19
Thallium (Tl)-Dissolved			95.4		%		70-130	03-NOV-19
Tin (Sn)-Dissolved			94.5		%		70-130	03-NOV-19
Titanium (Ti)-Dissolved			89.2		%		70-130	03-NOV-19
Uranium (U)-Dissolved			91.0		%		70-130	03-NOV-19
Vanadium (V)-Dissolved			92.0		%		70-130	03-NOV-19
Zinc (Zn)-Dissolved			89.2		%		70-130	03-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-14</b>	<b>LCS</b>							
Ammonia as N			113.7		%		85-115	05-NOV-19
<b>WG3211471-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896171</b>							
<b>WG3208949-10</b>	<b>LCS</b>							
Nitrite (as N)			102.6		%		90-110	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	31-OCT-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4896171							
<b>WG3208949-10</b>	<b>LCS</b>							
Nitrate (as N)			105.9		%		90-110	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	31-OCT-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4893526							
<b>WG3207572-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	31-OCT-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4897866							
<b>WG3209926-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			101.3		%		80-120	04-NOV-19
<b>WG3209926-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4897866							
<b>WG3209926-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			101.3		%		80-120	04-NOV-19
<b>WG3209926-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4895129							
<b>WG3207957-5</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	31-OCT-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4893366							
<b>WG3207287-3</b>	<b>DUP</b>	<b>L2375009-1</b>						
Orthophosphate-Dissolved (as P)		0.0118	0.0122		mg/L	3.5	20	31-OCT-19
<b>WG3207287-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	31-OCT-19
<b>WG3207287-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-OCT-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4896171							
<b>WG3208949-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.5		%		90-110	31-OCT-19
<b>WG3208949-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	31-OCT-19
<b>SOLIDS-TDS-CL</b>								
Batch	R4899012							
<b>WG3209631-8</b>	<b>LCS</b>							
Total Dissolved Solids			101.8		%		85-115	04-NOV-19
<b>WG3209631-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	04-NOV-19
<b>TKN-L-F-CL</b>								
Batch	R4895549							
<b>WG3208229-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.3		%		75-125	01-NOV-19
<b>WG3208229-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-NOV-19
<b>TSS-L-CL</b>								
Batch	R4898646							
<b>WG3209204-10</b>	<b>LCS</b>							
Total Suspended Solids			94.0		%		85-115	03-NOV-19
<b>WG3209204-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-NOV-19
<b>TURBIDITY-CL</b>								
Batch	R4893412							
<b>WG3207471-5</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	31-OCT-19
<b>WG3207471-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	31-OCT-19

# Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2375009

Report Date: 06-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	30-OCT-19 13:00	31-OCT-19 16:00	0.25	27	hours	EHTR-FM
pH	1	30-OCT-19 13:00	31-OCT-19 15:00	0.25	26	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2375009 were received on 31-OCT-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>	<b>20191030Q4GW</b>	<b>TURNAROUND TIME:</b>		<b>RUSH:</b>	
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Elkview Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Job Description	Q3 Ground Water Sampling	Lab Contact	Lyudmyla Shvets	Email 1:	kimberley.hackett@teck.com
Project Manager	Cameron Griffin	Email	lyudmyla.shvets@alsglobal.com	Email 2:	cameron.griffin@teck.com
Email	Cameron.Griffin@Teck.com	Address	2559 29 Street NE	Email 3:	bryan.ogden@teck.com
Address	RR#1 HWY# 3			Email 4:	tecklabresults@teck.com
				Email 5:	teckcoal@equisonline.com
City	Sparwood	Province	BC	City	Calgary
Postal Code		Country	Canada	Postal Code	T1Y 7B5
Phone Number	1-250-865-5289	Phone Number	403-407-1800	PO number	VPO00610852

SAMPLE DETAILS								ANALYSIS REQUESTED													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	TECK COAL-ROUTINE-VA (E305.1)	True Colour	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_ECGW_WG_2019_Q4_NP	EV_ECGW	WG		10/30/2019	13:00	G	5	RESERVED													
Total							5														

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
	Kimberley Hackett	October 30, 2019		10/31 9:00

<b>SERVICE REQUEST (rush - subject to availability)</b>			
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	Kimberley Hackett
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	
Emergency (1 Business Day) - 100% surcharge		Date/Time	October 30, 2019
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

8c





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 01-NOV-19  
Report Date: 07-NOV-19 12:27 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2375717  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191031Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2375717-1 WG 31-OCT-19 11:30 EV_GV3GW_WG_ 2019_Q4_NP	L2375717-2 WG 31-OCT-19 14:45 EV_BCGW_WG_2 019_Q4_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	577	627		
	Hardness (as CaCO3) (mg/L)	333	370		
	pH (pH)	8.03	7.99		
	ORP (mV)	495	441		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	393 <sup>DLHC</sup>	451 <sup>DLHC</sup>		
	Turbidity (NTU)	<0.10	0.13		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.1	2.7		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	204	184		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	204	184		
	Ammonia as N (mg/L)	<0.0050	0.0054		
	Bromide (Br) (mg/L)	<0.050	0.275		
	Chloride (Cl) (mg/L)	1.69	4.86		
	Fluoride (F) (mg/L)	0.511	0.176		
	Ion Balance (%)	94.6	97.4		
	Nitrate (as N) (mg/L)	0.164	2.34		
	Nitrite (as N) (mg/L)	0.0095	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.257		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019	0.0041 <sup>RRV</sup>		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0032 <sup>RRV</sup>		
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0038		
	Sulfate (SO4) (mg/L)	147	182		
	Anion Sum (meq/L)	7.21	7.78		
	Cation Sum (meq/L)	6.82	7.58		
	Cation - Anion Balance (%)	-2.8	-1.3		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	0.60		
	Total Organic Carbon (mg/L)	<0.50	0.60		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0040		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00013		
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00011		
	Barium (Ba)-Dissolved (mg/L)	0.0185	0.0378		
	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2375717-1	L2375717-2		
		Description	WG	WG		
		Sampled Date	31-OCT-19	31-OCT-19		
		Sampled Time	11:30	14:45		
		Client ID	EV_GV3GW_WG_2019_Q4_NP	EV_BCGW_WG_2019_Q4_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.011	0.013			
	Cadmium (Cd)-Dissolved (ug/L)	0.0061	0.0385			
	Calcium (Ca)-Dissolved (mg/L)	82.0	90.8			
	Chromium (Cr)-Dissolved (mg/L)	0.00020	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00123			
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0146	0.0208			
	Magnesium (Mg)-Dissolved (mg/L)	31.1	34.7			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000894	0.00101			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00370			
	Potassium (K)-Dissolved (mg/L)	0.928	1.00			
	Selenium (Se)-Dissolved (ug/L)	4.02	17.7			
	Silicon (Si)-Dissolved (mg/L)	3.07	2.43			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.29	4.03			
	Strontium (Sr)-Dissolved (mg/L)	0.521	0.163			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000012			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00168	0.00125			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0195			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2375717-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2375717-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)

## Reference Information

should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191031Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4895745							
<b>WG3208457-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.4		%		85-115	01-NOV-19
<b>WG3208457-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	01-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4898708							
<b>WG3210675-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.8		%		85-115	04-NOV-19
<b>WG3210675-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4897877							
<b>WG3209138-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4896242							
<b>WG3208979-10</b>	<b>LCS</b>							
Bromide (Br)			107.7		%		85-115	01-NOV-19
<b>WG3208979-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896797							
<b>WG3209588-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.4		%		80-120	03-NOV-19
<b>WG3209588-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4896797							
<b>WG3209588-6</b>	<b>LCS</b>							
Total Organic Carbon			103.9		%		80-120	03-NOV-19
<b>WG3209588-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	03-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4896242</b>								
<b>WG3208979-10</b>	<b>LCS</b>							
Chloride (Cl)			108.2		%		90-110	01-NOV-19
<b>WG3208979-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	01-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4898708</b>								
<b>WG3210675-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.1		%		90-110	04-NOV-19
<b>WG3210675-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-19
<b>F-IC-N-CL</b>								
<b>Batch R4896242</b>								
<b>WG3208979-10</b>	<b>LCS</b>							
Fluoride (F)			109.8		%		90-110	01-NOV-19
<b>WG3208979-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4898478</b>								
<b>WG3209761-11</b>	<b>DUP</b>	<b>L2375717-2</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3209761-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.1		%		80-120	05-NOV-19
<b>WG3209761-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	05-NOV-19
<b>WG3209761-12</b>	<b>MS</b>	<b>L2375717-1</b>						
Mercury (Hg)-Dissolved			105.6		%		70-130	05-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4897877</b>								
<b>WG3209138-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.5		%		80-120	03-NOV-19
Antimony (Sb)-Dissolved			92.9		%		80-120	03-NOV-19
Arsenic (As)-Dissolved			94.6		%		80-120	03-NOV-19
Barium (Ba)-Dissolved			103.6		%		80-120	03-NOV-19
Bismuth (Bi)-Dissolved			92.8		%		80-120	03-NOV-19
Boron (B)-Dissolved			98.9		%		80-120	03-NOV-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	03-NOV-19
Calcium (Ca)-Dissolved			100.5		%		80-120	03-NOV-19





## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			94.3		%		80-120	03-NOV-19
Cobalt (Co)-Dissolved			96.2		%		80-120	03-NOV-19
Copper (Cu)-Dissolved			96.3		%		80-120	03-NOV-19
Iron (Fe)-Dissolved			96.7		%		80-120	03-NOV-19
Lead (Pb)-Dissolved			95.0		%		80-120	03-NOV-19
Lithium (Li)-Dissolved			99.8		%		80-120	03-NOV-19
Magnesium (Mg)-Dissolved			96.1		%		80-120	03-NOV-19
Manganese (Mn)-Dissolved			93.1		%		80-120	03-NOV-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	03-NOV-19
Nickel (Ni)-Dissolved			95.3		%		80-120	03-NOV-19
Potassium (K)-Dissolved			94.9		%		80-120	03-NOV-19
Selenium (Se)-Dissolved			103.8		%		80-120	03-NOV-19
Silicon (Si)-Dissolved			97.5		%		60-140	03-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	03-NOV-19
Sodium (Na)-Dissolved			97.3		%		80-120	03-NOV-19
Strontium (Sr)-Dissolved			94.1		%		80-120	03-NOV-19
Thallium (Tl)-Dissolved			97.2		%		80-120	03-NOV-19
Tin (Sn)-Dissolved			96.3		%		80-120	03-NOV-19
Titanium (Ti)-Dissolved			93.0		%		80-120	03-NOV-19
Uranium (U)-Dissolved			91.9		%		80-120	03-NOV-19
Vanadium (V)-Dissolved			96.4		%		80-120	03-NOV-19
Zinc (Zn)-Dissolved			94.8		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-22</b>	<b>LCS</b>							
Ammonia as N			108.0		%		85-115	05-NOV-19
<b>WG3211471-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896242</b>							
<b>WG3208979-10</b>	<b>LCS</b>							
Nitrite (as N)			107.8		%		90-110	01-NOV-19
<b>WG3208979-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4896242							
<b>WG3208979-10 LCS</b>								
Nitrate (as N)			108.4		%		90-110	01-NOV-19
<b>WG3208979-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	01-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4896000							
<b>WG3208584-3 CRM</b>		<b>CL-ORP</b>						
ORP			226		mV		210-230	01-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4897866							
<b>WG3209926-11 DUP</b>		<b>L2375717-2</b>						
Phosphorus (P)-Total		0.0038	0.0040		mg/L	5.7	20	04-NOV-19
<b>WG3209926-10 LCS</b>								
Phosphorus (P)-Total			105.3		%		80-120	04-NOV-19
<b>WG3209926-9 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-19
<b>WG3209926-12 MS</b>		<b>L2375717-2</b>						
Phosphorus (P)-Total			86.3		%		70-130	04-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4897866							
<b>WG3209926-11 DUP</b>		<b>L2375717-2</b>						
Phosphorus (P)-Total Dissolved		0.0032	0.0033		mg/L	2.8	20	04-NOV-19
<b>WG3209926-10 LCS</b>								
Phosphorus (P)-Total Dissolved			105.3		%		80-120	04-NOV-19
<b>WG3209926-9 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	04-NOV-19
<b>WG3209926-12 MS</b>		<b>L2375717-2</b>						
Phosphorus (P)-Total Dissolved			82.7		%		70-130	04-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4898708							
<b>WG3210675-2 LCS</b>								
pH			7.02		pH		6.9-7.1	04-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>		<b>Water</b>						
Batch	R4895904							
<b>WG3208493-4</b>	<b>LCS</b>							
	Orthophosphate-Dissolved (as P)		100.4		%		80-120	01-NOV-19
<b>WG3208493-6</b>	<b>LCS</b>							
	Orthophosphate-Dissolved (as P)		100.2		%		80-120	01-NOV-19
<b>WG3208493-3</b>	<b>MB</b>							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	01-NOV-19
<b>WG3208493-5</b>	<b>MB</b>							
	Orthophosphate-Dissolved (as P)		<0.0010		mg/L		0.001	01-NOV-19
<b>SO4-IC-N-CL</b>		<b>Water</b>						
Batch	R4896242							
<b>WG3208979-10</b>	<b>LCS</b>							
	Sulfate (SO4)		107.5		%		90-110	01-NOV-19
<b>WG3208979-9</b>	<b>MB</b>							
	Sulfate (SO4)		<0.30		mg/L		0.3	01-NOV-19
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4900577							
<b>WG3210718-5</b>	<b>LCS</b>							
	Total Dissolved Solids		99.9		%		85-115	05-NOV-19
<b>WG3210718-4</b>	<b>MB</b>							
	Total Dissolved Solids		<10		mg/L		10	05-NOV-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4896222							
<b>WG3208954-10</b>	<b>LCS</b>							
	Total Kjeldahl Nitrogen		97.3		%		75-125	02-NOV-19
<b>WG3208954-9</b>	<b>MB</b>							
	Total Kjeldahl Nitrogen		<0.050		mg/L		0.05	02-NOV-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4898758							
<b>WG3209732-4</b>	<b>LCS</b>							
	Total Suspended Solids		95.3		%		85-115	04-NOV-19
<b>WG3209732-3</b>	<b>MB</b>							
	Total Suspended Solids		<1.0		mg/L		1	04-NOV-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4896011							
<b>WG3208580-5</b>	<b>LCS</b>							
	Turbidity		98.0		%		85-115	01-NOV-19
<b>WG3208580-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4896011							
WG3208580-4	MB							
Turbidity			<0.10		NTU		0.1	01-NOV-19

# Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2375717

Report Date: 07-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	31-OCT-19 11:30	01-NOV-19 13:00	0.25	25	hours	EHTR-FM
	2	31-OCT-19 14:45	01-NOV-19 13:00	0.25	22	hours	EHTR-FM
pH	1	31-OCT-19 11:30	04-NOV-19 10:00	0.25	95	hours	EHTR-FM
	2	31-OCT-19 14:45	04-NOV-19 10:00	0.25	91	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2375717 were received on 01-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191031Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudnyla Shvets			Email 1:	kimberley.hackett@teck.com		Y	X	X
Project Manager	Cameron Griffin			Email	lyudnyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogdenn@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Reqs@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@acquisitionline.com		X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852				

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_GV3GW_WG_2019_Q4_NP	EV_GV3GW	WG		10/31/2019	11:30	G	5	1	1	1		1					1		
EV_BCGW_WG_2019_Q4_NP	EV_BCGW	WG		10/31/2019	14:45	G	5	1	1	1		1					1		
Total							10												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	October 31, 2019		11/05 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett	
	Sampler's Signature	Date/Time
		October 31, 2019

7c





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 05-NOV-19  
Report Date: 12-NOV-19 12:52 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2377181  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191104Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2377181-1 WG 04-NOV-19 13:05 EV_MCGWS_WG_ 2019_Q4_NP	L2377181-2 WG 04-NOV-19 11:30 EV_MCGWD_WG_ 2019_Q4_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	734	505		
	Hardness (as CaCO3) (mg/L)	393	239		
	pH (pH)	7.68	7.80		
	ORP (mV)	101	391		
	Total Suspended Solids (mg/L)	8.5	4.3		
	Total Dissolved Solids (mg/L)	482 <sup>DLHC</sup>	318 <sup>DLHC</sup>		
	Turbidity (NTU)	25.6	9.00		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.7	2.2		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	264	234		
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)	264	234		
	Ammonia as N (mg/L)	0.152	0.275		
	Bromide (Br) (mg/L)	0.154	<0.050		
	Chloride (Cl) (mg/L)	36.0	1.80		
	Fluoride (F) (mg/L)	0.468	1.16		
	Ion Balance (%)	108	107		
	Nitrate (as N) (mg/L)	0.0115	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)	0.191	0.313		
	Total Nitrogen (mg/L)	0.202	0.313		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0029		
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0296		
	Phosphorus (P)-Total (mg/L)	0.0076	0.0258		
	Sulfate (SO4) (mg/L)	126	65.6		
	Anion Sum (meq/L)	8.95	6.15		
	Cation Sum (meq/L)	9.70	6.58		
	Cation - Anion Balance (%)	4.0	3.4		
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.08	1.13		
	Total Organic Carbon (mg/L)	1.12	1.52		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Dissolved (mg/L)	0.00158	0.00166		
	Barium (Ba)-Dissolved (mg/L)	0.0263	0.0593		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2377181-1 WG 04-NOV-19 13:05 EV_MCGWS_WG_ 2019_Q4_NP	L2377181-2 WG 04-NOV-19 11:30 EV_MCGWD_WG_ 2019_Q4_NP		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020		
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		
	Boron (B)-Dissolved (mg/L)	0.027	0.073		
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050		
	Calcium (Ca)-Dissolved (mg/L)	101	51.4		
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Dissolved (ug/L)	0.11	0.63		
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00021		
	Iron (Fe)-Dissolved (mg/L)	2.10	1.05		
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	0.0247	0.0086		
	Magnesium (Mg)-Dissolved (mg/L)	34.3	26.8		
	Manganese (Mn)-Dissolved (mg/L)	0.141	0.508		
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.00501	0.0189		
	Nickel (Ni)-Dissolved (mg/L)	0.00089	0.00396		
	Potassium (K)-Dissolved (mg/L)	1.95	1.45		
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050		
	Silicon (Si)-Dissolved (mg/L)	5.55	5.53		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	38.3	38.5		
	Strontium (Sr)-Dissolved (mg/L)	0.335	0.542		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00011		
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.00205	0.00301		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050		
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0059		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2377181-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2377181-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C.			

## Reference Information

The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191104Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 1 of 9

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900399</b>							
<b>WG3211880-6</b>	<b>DUP</b>	<b>L2377181-1</b>						
Acidity (as CaCO3)		3.7	4.7	J	mg/L	1.1	2	05-NOV-19
<b>WG3211880-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.7		%		85-115	05-NOV-19
<b>WG3211880-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.7		%		85-115	05-NOV-19
<b>WG3211880-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	05-NOV-19
<b>WG3211880-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	05-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4898881</b>							
<b>WG3211068-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	05-NOV-19
<b>WG3211068-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3212487-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.8		%		80-120	08-NOV-19
<b>WG3212487-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900768</b>							
<b>WG3212150-6</b>	<b>LCS</b>							
Bromide (Br)			96.3		%		85-115	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900411</b>							
<b>WG3212038-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4900411							
<b>WG3212038-10 LCS</b>								
Total Organic Carbon			104.5		%		80-120	05-NOV-19
<b>WG3212038-9 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6 LCS</b>								
Chloride (Cl)			99.8		%		90-110	05-NOV-19
<b>WG3212150-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	05-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-14 LCS</b>								
Conductivity (@ 25C)			94.1		%		90-110	05-NOV-19
<b>WG3211068-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	05-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6 LCS</b>								
Fluoride (F)			104.3		%		90-110	05-NOV-19
<b>WG3212150-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4902802							
<b>WG3213312-10 LCS</b>								
Mercury (Hg)-Dissolved			98.9		%		80-120	08-NOV-19
<b>WG3213312-9 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4903856							
<b>WG3212487-2 LCS</b>								
Aluminum (Al)-Dissolved			105.0		%		80-120	08-NOV-19
Antimony (Sb)-Dissolved			95.1		%		80-120	08-NOV-19
Arsenic (As)-Dissolved			108.4		%		80-120	08-NOV-19
Barium (Ba)-Dissolved			106.1		%		80-120	08-NOV-19
Bismuth (Bi)-Dissolved			102.7		%		80-120	08-NOV-19
Boron (B)-Dissolved			95.9		%		80-120	08-NOV-19





## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3212487-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			104.4		%		80-120	08-NOV-19
Calcium (Ca)-Dissolved			102.1		%		80-120	08-NOV-19
Chromium (Cr)-Dissolved			109.7		%		80-120	08-NOV-19
Cobalt (Co)-Dissolved			106.3		%		80-120	08-NOV-19
Copper (Cu)-Dissolved			105.7		%		80-120	08-NOV-19
Iron (Fe)-Dissolved			102.5		%		80-120	08-NOV-19
Lead (Pb)-Dissolved			100.8		%		80-120	08-NOV-19
Lithium (Li)-Dissolved			96.1		%		80-120	08-NOV-19
Magnesium (Mg)-Dissolved			101.9		%		80-120	08-NOV-19
Manganese (Mn)-Dissolved			106.9		%		80-120	08-NOV-19
Molybdenum (Mo)-Dissolved			99.9		%		80-120	08-NOV-19
Nickel (Ni)-Dissolved			106.8		%		80-120	08-NOV-19
Potassium (K)-Dissolved			109.7		%		80-120	08-NOV-19
Selenium (Se)-Dissolved			106.1		%		80-120	08-NOV-19
Silicon (Si)-Dissolved			116.4		%		60-140	08-NOV-19
Silver (Ag)-Dissolved			97.8		%		80-120	08-NOV-19
Sodium (Na)-Dissolved			108.9		%		80-120	08-NOV-19
Strontium (Sr)-Dissolved			102.7		%		80-120	08-NOV-19
Thallium (Tl)-Dissolved			100.2		%		80-120	08-NOV-19
Tin (Sn)-Dissolved			98.7		%		80-120	08-NOV-19
Titanium (Ti)-Dissolved			106.1		%		80-120	08-NOV-19
Uranium (U)-Dissolved			100.0		%		80-120	08-NOV-19
Vanadium (V)-Dissolved			107.8		%		80-120	08-NOV-19
Zinc (Zn)-Dissolved			110.3		%		80-120	08-NOV-19
<b>WG3212487-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-NOV-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	08-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3212487-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-22</b>	<b>LCS</b>							
Ammonia as N			108.0		%		85-115	05-NOV-19
<b>WG3211471-6</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	05-NOV-19
<b>WG3211471-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>WG3211471-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Nitrite (as N)			96.6		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Nitrate (as N)			101.7		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4899282							
<b>WG3211279-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			217		mV		210-230	05-NOV-19
<b>WG3211279-6</b>	<b>DUP</b>	<b>L2377181-2</b>						
ORP		391	397	J	mV	6.0	15	05-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4901159							
<b>WG3212271-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			108.6		%		80-120	06-NOV-19
<b>WG3212271-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4901159							
<b>WG3212271-14</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			108.6		%		80-120	06-NOV-19
<b>WG3212271-13</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	06-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-14</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	05-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4900090							
<b>WG3210690-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	05-NOV-19
<b>WG3210690-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.3		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4902229							
<b>WG3211857-8</b>	<b>LCS</b>							
Total Dissolved Solids			98.4		%		85-115	06-NOV-19
<b>WG3211857-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	06-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4900635							
<b>WG3211987-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.4		%		75-125	06-NOV-19
<b>WG3211987-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4902443							
<b>WG3212286-6</b>	<b>LCS</b>							
Total Suspended Solids			95.6		%		85-115	06-NOV-19
<b>WG3212286-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	06-NOV-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R4899311							
<b>WG3211483-6</b>	<b>DUP</b>	<b>L2377181-2</b>						
Turbidity		9.00	8.97		NTU	0.3	15	05-NOV-19
<b>WG3211483-5</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	05-NOV-19
<b>WG3211483-8</b>	<b>LCS</b>							
Turbidity			94.0		%		85-115	05-NOV-19
<b>WG3211483-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4899311</b>							
<b>WG3211483-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-NOV-19
<b>WG3211483-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-NOV-19

# Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2377181

Report Date: 12-NOV-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	04-NOV-19 13:05	05-NOV-19 13:00	0.25	24	hours	EHTR-FM
	2	04-NOV-19 11:30	05-NOV-19 13:00	0.25	25	hours	EHTR-FM
pH	1	04-NOV-19 13:05	05-NOV-19 12:00	0.25	23	hours	EHTR-FM
	2	04-NOV-19 11:30	05-NOV-19 12:00	0.25	24	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2377181 were received on 05-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20191104Q4GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com			
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com			
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.egdenn@teck.com			
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com			
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury
EV_MCGWS_WG_2019_Q4_NP	EV_MCGWS	WG		11/4/2019	13:05	G	5	1	1	1		1					1	
EV_MCGWD_WG_2019_Q4_NP	EV_MCGWD	WG		11/4/2019	11:30	G	5	1	1	1		1					1	
Total							10											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	November 4, 2019	<i>[Signature]</i>	11/05 9:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	November 4, 2019

7°C





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 05-NOV-19  
Report Date: 08-NOV-19 17:19 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2377218  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191104Q4POT  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2377218-1 WG 04-NOV-19 13:55 EV_HW1_WG_201 9_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)	<5.0			
	Conductivity (@ 25C) (uS/cm)	1080			
	Hardness (as CaCO3) (mg/L)	685			
	pH (pH)	7.57			
	ORP (mV)	404			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	920	DLHC		
	Turbidity (NTU)	0.16			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	6.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	235			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	235			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	0.98	DLHC		
	Chloride (Cl) (mg/L)	28.4	DLHC		
	Fluoride (F) (mg/L)	0.18	DLHC		
	Ion Balance (%)	98.6			
	Nitrate (as N) (mg/L)	8.35	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	8.35			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0032	RRV		
	Phosphorus (P)-Total Dissolved (mg/L)	0.0027	RRV		
	Phosphorus (P)-Total (mg/L)	0.0031			
	Sulfate (SO4) (mg/L)	400	DLHC		
	Anion Sum (meq/L)	14.4			
	Cation Sum (meq/L)	14.2			
	Cation - Anion Balance (%)	-0.7			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00013			
	Arsenic (As)-Dissolved (mg/L)	0.00012			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2377218-1 WG 04-NOV-19 13:55 EV_HW1_WG_201 9_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Barium (Ba)-Dissolved (mg/L)	0.0643			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.029			
	Cadmium (Cd)-Dissolved (ug/L)	0.0831			
	Calcium (Ca)-Dissolved (mg/L)	157			
	Chromium (Cr)-Dissolved (mg/L)	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.0395			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000201			
	Lithium (Li)-Dissolved (mg/L)	0.0568			
	Magnesium (Mg)-Dissolved (mg/L)	70.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00038			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000653			
	Nickel (Ni)-Dissolved (mg/L)	0.00098			
	Potassium (K)-Dissolved (mg/L)	2.40			
	Selenium (Se)-Dissolved (ug/L)	58.8			
	Silicon (Si)-Dissolved (mg/L)	3.76			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	11.7			
	Strontium (Sr)-Dissolved (mg/L)	0.333			
	Thallium (Tl)-Dissolved (mg/L)	0.000025			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00169			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0416			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2377218-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2377218-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2377218-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2377218-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2377218-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2377218-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2377218-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2377218-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2377218-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>COLOUR-TRUE-CL</b>	Water	Colour (True) by Spectrometer	APHA 2120 Color

## Reference Information

True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20191104Q4POT

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900399</b>							
<b>WG3211880-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.7		%		85-115	05-NOV-19
<b>WG3211880-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	05-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4898881</b>							
<b>WG3211068-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	05-NOV-19
<b>WG3211068-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901748</b>							
<b>WG3212661-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			107.2		%		80-120	06-NOV-19
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900768</b>							
<b>WG3212150-6</b>	<b>LCS</b>							
Bromide (Br)			96.3		%		85-115	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900411</b>							
<b>WG3212038-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900411</b>							
<b>WG3212038-10</b>	<b>LCS</b>							
Total Organic Carbon			104.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Chloride (Cl)			99.8		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	05-NOV-19
<b>COLOUR-TRUE-CL</b>	<b>Water</b>							
Batch	R4899089							
<b>WG3211150-3</b>	<b>DUP</b>	<b>L2377218-1</b>						
Colour, True		<5.0	<5.0	RPD-NA	CU	N/A	20	05-NOV-19
<b>WG3211150-2</b>	<b>LCS</b>							
Colour, True			107.4		%		85-115	05-NOV-19
<b>WG3211150-1</b>	<b>MB</b>							
Colour, True			<5.0		CU		5	05-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.4		%		90-110	05-NOV-19
<b>WG3211068-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Fluoride (F)			104.3		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4903251							
<b>WG3214420-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.1		%		80-120	08-NOV-19
<b>WG3214420-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4901748							
<b>WG3212661-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.8		%		80-120	06-NOV-19
Antimony (Sb)-Dissolved			103.3		%		80-120	06-NOV-19
Arsenic (As)-Dissolved			99.1		%		80-120	06-NOV-19
Barium (Ba)-Dissolved			104.0		%		80-120	06-NOV-19





## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901748</b>							
<b>WG3212661-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			102.6		%		80-120	06-NOV-19
Boron (B)-Dissolved			109.4		%		80-120	06-NOV-19
Cadmium (Cd)-Dissolved			97.8		%		80-120	06-NOV-19
Calcium (Ca)-Dissolved			103.3		%		80-120	06-NOV-19
Chromium (Cr)-Dissolved			98.0		%		80-120	06-NOV-19
Cobalt (Co)-Dissolved			98.4		%		80-120	06-NOV-19
Copper (Cu)-Dissolved			97.0		%		80-120	06-NOV-19
Iron (Fe)-Dissolved			96.6		%		80-120	06-NOV-19
Lead (Pb)-Dissolved			105.2		%		80-120	06-NOV-19
Lithium (Li)-Dissolved			105.8		%		80-120	06-NOV-19
Magnesium (Mg)-Dissolved			99.2		%		80-120	06-NOV-19
Manganese (Mn)-Dissolved			104.4		%		80-120	06-NOV-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	06-NOV-19
Nickel (Ni)-Dissolved			99.3		%		80-120	06-NOV-19
Potassium (K)-Dissolved			106.5		%		80-120	06-NOV-19
Selenium (Se)-Dissolved			99.0		%		80-120	06-NOV-19
Silicon (Si)-Dissolved			103.4		%		60-140	06-NOV-19
Silver (Ag)-Dissolved			102.2		%		80-120	06-NOV-19
Sodium (Na)-Dissolved			105.0		%		80-120	06-NOV-19
Strontium (Sr)-Dissolved			101.4		%		80-120	06-NOV-19
Thallium (Tl)-Dissolved			104.3		%		80-120	06-NOV-19
Tin (Sn)-Dissolved			98.9		%		80-120	06-NOV-19
Titanium (Ti)-Dissolved			98.2		%		80-120	06-NOV-19
Uranium (U)-Dissolved			107.5		%		80-120	06-NOV-19
Vanadium (V)-Dissolved			102.6		%		80-120	06-NOV-19
Zinc (Zn)-Dissolved			96.7		%		80-120	06-NOV-19
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-NOV-19



## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901748</b>							
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-35</b>	<b>DUP</b>	<b>L2377218-1</b>						
Ammonia as N			<0.0050		mg/L	N/A	20	06-NOV-19
<b>WG3211471-34</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	05-NOV-19
<b>WG3211471-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>WG3211471-36</b>	<b>MS</b>	<b>L2377218-1</b>						
Ammonia as N			108.1		%		75-125	06-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Nitrite (as N)			96.6		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-6</b>	<b>LCS</b>							
Nitrate (as N)			101.7		%		90-110	05-NOV-19
<b>WG3212150-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4899282							
<b>WG3211279-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			217		mV		210-230	05-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4901159							
<b>WG3212271-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			108.6		%		80-120	06-NOV-19
<b>WG3212271-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4901159							
<b>WG3212271-14</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			108.6		%		80-120	06-NOV-19
<b>WG3212271-13</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	06-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	05-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4900090							
<b>WG3210690-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.9		%		80-120	05-NOV-19
<b>WG3210690-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4900090							
WG3210690-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4900768							
WG3212150-6	LCS							
Sulfate (SO4)			103.3		%		90-110	05-NOV-19
WG3212150-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4902229							
WG3211857-8	LCS							
Total Dissolved Solids			98.4		%		85-115	06-NOV-19
WG3211857-7	MB							
Total Dissolved Solids			<10		mg/L		10	06-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4900635							
WG3211987-6	LCS							
Total Kjeldahl Nitrogen			96.4		%		75-125	06-NOV-19
WG3211987-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4902443							
WG3212286-6	LCS							
Total Suspended Solids			95.6		%		85-115	06-NOV-19
WG3212286-5	MB							
Total Suspended Solids			<1.0		mg/L		1	06-NOV-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R4899311							
WG3211483-8	LCS							
Turbidity			94.0		%		85-115	05-NOV-19
WG3211483-7	MB							
Turbidity			<0.10		NTU		0.1	05-NOV-19

# Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2377218

Report Date: 08-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	04-NOV-19 13:55	05-NOV-19 13:00	0.25	23	hours	EHTR-FM
pH	1	04-NOV-19 13:55	05-NOV-19 12:00	0.25	22	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).



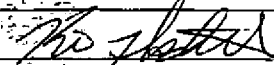
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2377218 were received on 05-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>20191104Q4POT</b>		TURNAROUND TIME:		RUSH:																																																	
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>																																															
Facility Name / Job#	Elkview Operations		Lab Name	ALS Calgary		Report Format / Distribution	Excel PDF EDD																																														
Job Description	Q3 Ground Water Sampling		Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com																																														
Project Manager	Cameron Griffin		Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com																																														
Email	Cameron.Griffin@Teck.com		Address	2559 29 Street NE		Email 3:	bryan.ogden@teck.com																																														
Address	RR#1 HWY# 3					Email 4:	Teck Lab Returns@sharepoint.teck.com																																														
City	Sparwood	Province	BC	City	Calgary	Province	AB																																														
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada																																														
Phone Number	1-250-865-5289		Phone Number	403-407-1800		PO number	VPO00610852																																														
<b>SAMPLE DETAILS</b>				<b>ANALYSIS REQUESTED</b>																																																	
 <p>L2377218-COFC</p>				<p>Filtered: P: Field, U: Lab, F: Field #, Lab, N: None</p> <table border="1"> <thead> <tr> <th rowspan="2">PRESERVE</th> <th colspan="2">Nitrite</th> <th colspan="2">Sulphuric</th> <th colspan="2">Sulphuric</th> <th colspan="2">Sodium Bisulphate</th> <th colspan="2">HCl</th> </tr> <tr> <th>No</th> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th> <th>Yes</th> </tr> </thead> <tbody> <tr> <td rowspan="2">ANALYSIS</td> <td>TECKCOAL-ROUTINE-VA (E305.1)</td> <td>True Colour</td> <td>TECKCOAL-MET-D-VA (SW6020)</td> <td>DOC (APHA 5310)</td> <td>Dissolved Phosphorus</td> <td>TKN/TOC (APHA 4500-NORG)</td> <td>Total Nitrogen for BC (NO2 and NO3)</td> <td>T-ULTRA MERCURY (SW6020)</td> <td>D-ULTRA MERCURY (SW6020)</td> <td>EPH (C10-C32)</td> <td>D-Mercury</td> <td>T-Mercury</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				PRESERVE	Nitrite		Sulphuric		Sulphuric		Sodium Bisulphate		HCl		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury												
PRESERVE	Nitrite		Sulphuric		Sulphuric		Sodium Bisulphate		HCl																																												
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes																																											
ANALYSIS	TECKCOAL-ROUTINE-VA (E305.1)	True Colour	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury																																									
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.																																														
EV_HWL_WG_2019_Q4_NP	EV_HWL	WG		11/4/2019	13:55	G	5																																														
							Total	5																																													
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>																																													
			Kimberley Hackett		November 4, 2019			11/05 9:00																																													
<b>SERVICE REQUEST (rush - subject to availability)</b>			<b>SAMPLER'S NAME</b>		<b>MOBILE #</b>																																																
Regular (default) X			Kimberley Hackett																																																		
Priority (2-3 business days) - 50% surcharge			<b>SAMPLER'S SIGNATURE</b>		<b>DATE/TIME</b>		November 4, 2019																																														
Emergency (1 Business Day) - 100% surcharge																																																					
For Emergency <1 Day, ASAP or Weekend - Contact ALS																																																					

7°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 06-NOV-19  
Report Date: 15-NOV-19 16:36 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2378440  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191105Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2378440-1 WG 05-NOV-19 14:55 EV_OCGW_WG_2 019_Q4_NP	L2378440-2 WG 05-NOV-19 15:00 EV_MC5GW_WG_ 2019_Q4_NP	L2378440-3 WG 05-NOV-19 15:05 EV_MC6GW_WG_ 2019_Q4_NP	L2378440-4 WG 05-NOV-19 15:10 EV_MC7GW_WG_ 2019_Q4_NP	L2378440-5 WG 05-NOV-19 14:55 EV_GCGW_WG_2 019_Q4_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	443	443	<2.0	<2.0	363
	Hardness (as CaCO3) (mg/L)	151	153	<0.50	<0.50	214
	pH (pH)	8.25	8.28	6.32	5.38	8.19
	ORP (mV)	328	457	462	479	346
	Total Suspended Solids (mg/L)	4.6	4.6	<1.0	<1.0	3.0
	Total Dissolved Solids (mg/L)	315 <sup>DLHC</sup>	302 <sup>DLHC</sup>	<10	<10	276 <sup>DLHC</sup>
	Turbidity (NTU)	4.66	4.34	<0.10	<0.10 <sup>RRV</sup>	5.19
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0	<1.0	1.9	2.0	<1.0
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	177	184	<1.0	<1.0	170
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	177	184	<1.0	<1.0	170
	Ammonia as N (mg/L)	0.0739	0.0764	<0.0050	<0.0050	0.0366
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	2.29	2.29	<0.50	<0.50	3.72
	Fluoride (F) (mg/L)	1.30	1.33	<0.020	<0.020	0.503
	Ion Balance (%)	103	101	0.0	0.0	96.9
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0059
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.137	0.158	<0.050	<0.050	0.078
	Total Nitrogen (mg/L)	0.137	0.158	<0.050	<0.050	0.084
	Orthophosphate-Dissolved (as P) (mg/L)	0.0076	0.0074	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0140	0.0121	<0.0020	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0240	0.0246	<0.0020	<0.0020	0.0041
	Sulfate (SO4) (mg/L)	76.4	76.5	<0.30	<0.30	52.8
	Anion Sum (meq/L)	5.26	5.40	<0.10	<0.10	4.62
	Cation Sum (meq/L)	5.43	5.48	<0.10	<0.10	4.48
Cation - Anion Balance (%)	1.6	0.7	0.0	0.0	-1.6	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	1.00
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	LAB	LAB	LAB	LAB	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00146	0.00145	<0.00010	<0.00010	0.00253
	Barium (Ba)-Dissolved (mg/L)	0.0594	0.0593	<0.00010	<0.00010	0.0704

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2378440-6 WG 05-NOV-19 13:15 EV_LSGW_WG_20 19_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	867			
	Hardness (as CaCO3) (mg/L)	597			
	pH (pH)	8.12			
	ORP (mV)	277			
	Total Suspended Solids (mg/L)	7.2			
	Total Dissolved Solids (mg/L)	569	DLHC		
	Turbidity (NTU)	29.4			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	528			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	528			
	Ammonia as N (mg/L)	0.166			
	Bromide (Br) (mg/L)	<0.25	DLHC		
	Chloride (Cl) (mg/L)	9.0	DLHC		
	Fluoride (F) (mg/L)	0.22	DLHC		
	Ion Balance (%)	104			
	Nitrate (as N) (mg/L)	<0.025	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	0.268			
	Total Nitrogen (mg/L)	0.268			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0135			
	Phosphorus (P)-Total (mg/L)	0.0198			
	Sulfate (SO4) (mg/L)	62.7	DLHC		
	Anion Sum (meq/L)	12.1			
	Cation Sum (meq/L)	12.6			
	Cation - Anion Balance (%)	2.1			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.09			
	Total Organic Carbon (mg/L)	1.98			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00190			
	Barium (Ba)-Dissolved (mg/L)	0.212			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2378440-1 WG 05-NOV-19 14:55 EV_OCGW_WG_2 019_Q4_NP	L2378440-2 WG 05-NOV-19 15:00 EV_MC5GW_WG_ 2019_Q4_NP	L2378440-3 WG 05-NOV-19 15:05 EV_MC6GW_WG_ 2019_Q4_NP	L2378440-4 WG 05-NOV-19 15:10 EV_MC7GW_WG_ 2019_Q4_NP	L2378440-5 WG 05-NOV-19 14:55 EV_GCGW_WG_2 019_Q4_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.123	0.125	<0.010	<0.010	0.016
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	29.2	29.8	<0.050	<0.050	58.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	0.12	0.12	<0.10	<0.10	0.13
	Copper (Cu)-Dissolved (mg/L)	0.00026	<0.00020	<0.00020	<0.00020	0.00034
	Iron (Fe)-Dissolved (mg/L)	0.142	0.154	<0.010	<0.010	0.363
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0268	0.0272	<0.0010	<0.0010	0.0083
	Magnesium (Mg)-Dissolved (mg/L)	19.1	19.1	<0.10	<0.10	16.7
	Manganese (Mn)-Dissolved (mg/L)	0.101	0.103	<0.00010	<0.00010	0.0652
	Mercury (Hg)-Dissolved (mg/L)					<0.000050
	Mercury (Hg)-Dissolved (ug/L)	<0.00050	<0.00050	<0.00050	<0.00050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0151	0.0149	<0.000050	<0.000050	0.00268
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	1.67	1.70	<0.050	<0.050	0.852
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	4.55	4.60	<0.050	<0.050	4.72
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	54.0	54.4	<0.050	<0.050	3.79
	Strontium (Sr)-Dissolved (mg/L)	0.423	0.411	<0.00020	<0.00020	0.238
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00114	0.00115	<0.000010	<0.000010	0.00103
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0011	0.0015
<b>Hydrocarbons</b>	EPH10-19 (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	EPH (C10-C32) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	EPH19-32 (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	TEH (C10-C30) (mg/L)	<0.25	<0.25	<0.25	<0.25	<0.25
	Surrogate: 2-Bromobenzotrifluoride (%)	92.5	107.1	98.2	99.7	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2378440-6 WG 05-NOV-19 13:15 EV_LSGW_WG_20 19_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.048			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	117			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	1.39			
	Copper (Cu)-Dissolved (mg/L)	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	2.20			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0667			
	Magnesium (Mg)-Dissolved (mg/L)	74.1			
	Manganese (Mn)-Dissolved (mg/L)	1.28			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Mercury (Hg)-Dissolved (ug/L)				
	Molybdenum (Mo)-Dissolved (mg/L)	0.00248			
	Nickel (Ni)-Dissolved (mg/L)	0.00452			
	Potassium (K)-Dissolved (mg/L)	4.43			
	Selenium (Se)-Dissolved (ug/L)	0.084			
	Silicon (Si)-Dissolved (mg/L)	5.08			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	10.2			
	Strontium (Sr)-Dissolved (mg/L)	0.494			
	Thallium (Tl)-Dissolved (mg/L)	0.000041			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00184			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0017			
<b>Hydrocarbons</b>	EPH10-19 (mg/L)				
	EPH (C10-C32) (mg/L)				
	EPH19-32 (mg/L)				
	TEH (C10-C30) (mg/L)				
	Surrogate: 2-Bromobenzotrifluoride (%)				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - Dissolved Ultra Trace Mercury on samples L2378440-1 to -4

### Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2378440-4	EV_MC7GW_WG_2019_Q4_	SPL	Sample was Preserved at the laboratory - DOC, DISSOLVED METALS NOT FILTERED/PRESERVED. NUTRIENTS NOT PRESERVED

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Boron (B)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2378440-3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2378440-1, -2, -3, -4, -5, -6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2378440-3, -4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by

## Reference Information

subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**EPH(10-32)-CALC-CL** Water Sum of EPH (10-32) Sum of EPH - Auto Calculated

The sum of EPH(C10-C19) and EPH(C19-C32)

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-D-U-CVAF-VA** Water Diss. Mercury in Water by CVAFS (Ultra) APHA 3030 B / EPA 1631 REV. E

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1631 Rev. E. by the United States Environmental Protection Agency (EPA). The procedure may involve preliminary sample treatment by filtration (APHA 3030B) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to a purge and trap concentration step and final reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TEH-BC-VA-CL</b>	Water	EPH (C10-C19) & EPH (C19-C32)	BCMEOE EPH GCFID
Analysis is in accordance with BC MOE Lab Manual method "Extractable Petroleum Hydrocarbons in Water by GC/FID", v2.1, July 1999. Whole water samples are extracted with DCM prior to gas chromatography with flame ionization detection (GC-FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).			
<b>TEH-WATER-VA-CL</b>	Water	TEH (C10-C30)	BC Lab Manual
Water samples are spiked with 2-BBTF surrogate, and extracted by reciprocal action shaker for 1 hour using a single micro-extraction with hexane. After extraction, the hexane layer is drawn off and analyzed on a gas chromatograph equipped with a flame ionization detector.			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## Reference Information

VA

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

---

20191105Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.





## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 1 of 12

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4903391							
<b>WG3214624-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.96		%		85-115	07-NOV-19
<b>WG3214624-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.4		%		85-115	07-NOV-19
<b>WG3214624-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	07-NOV-19
<b>WG3214624-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	07-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4903372							
<b>WG3214593-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	07-NOV-19
<b>WG3214593-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	07-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4903856							
<b>WG3213868-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.2		%		80-120	08-NOV-19
<b>WG3213868-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4903167							
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>							
Bromide (Br)			100.1		%		85-115	07-NOV-19
<b>WG3214547-6</b>	<b>LCS</b>							
Bromide (Br)			95.8		%		85-115	07-NOV-19
<b>WG3214547-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-NOV-19
<b>WG3214547-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-NOV-19
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>						
Bromide (Br)			104.6		%		75-125	07-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4903726								
<b>WG3215221-2</b>	<b>LCS</b>								
Dissolved Organic Carbon			98.7		%		80-120	08-NOV-19	
<b>WG3215221-1</b>	<b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-NOV-19	
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>									
Batch	R4903726								
<b>WG3215221-2</b>	<b>LCS</b>								
Total Organic Carbon			100.3		%		80-120	08-NOV-19	
<b>WG3215221-1</b>	<b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	08-NOV-19	
<b>CL-IC-N-CL</b> <b>Water</b>									
Batch	R4903167								
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>							
Chloride (Cl)			<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>								
Chloride (Cl)			101.5		%		90-110	07-NOV-19	
<b>WG3214547-6</b>	<b>LCS</b>								
Chloride (Cl)			101.1		%		90-110	07-NOV-19	
<b>WG3214547-1</b>	<b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-NOV-19	
<b>WG3214547-5</b>	<b>MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-NOV-19	
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>							
Chloride (Cl)			110.4		%		75-125	07-NOV-19	
<b>EC-L-PCT-CL</b> <b>Water</b>									
Batch	R4903372								
<b>WG3214593-8</b>	<b>LCS</b>								
Conductivity (@ 25C)			98.0		%		90-110	07-NOV-19	
<b>WG3214593-7</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	07-NOV-19	
<b>F-IC-N-CL</b> <b>Water</b>									
Batch	R4903167								
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>							
Fluoride (F)			<0.020	<0.020	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>								
Fluoride (F)			102.1		%		90-110	07-NOV-19	
<b>WG3214547-6</b>	<b>LCS</b>								



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903167</b>							
<b>WG3214547-6</b>	<b>LCS</b>							
Fluoride (F)			104.4		%		90-110	07-NOV-19
<b>WG3214547-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-NOV-19
<b>WG3214547-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-NOV-19
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>						
Fluoride (F)			119.6		%		75-125	07-NOV-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903885</b>							
<b>WG3214632-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			89.9		%		80-120	09-NOV-19
<b>WG3214632-9</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	09-NOV-19
<b>HG-D-U-CVAF-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906155</b>							
<b>WG3217866-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			90.0		%		80-120	13-NOV-19
<b>WG3217866-1</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.00050		ug/L		0.0005	13-NOV-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3213868-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.2		%		80-120	08-NOV-19
Antimony (Sb)-Dissolved			93.6		%		80-120	08-NOV-19
Arsenic (As)-Dissolved			104.7		%		80-120	08-NOV-19
Barium (Ba)-Dissolved			103.9		%		80-120	08-NOV-19
Bismuth (Bi)-Dissolved			97.9		%		80-120	08-NOV-19
Boron (B)-Dissolved			100.0		%		80-120	08-NOV-19
Cadmium (Cd)-Dissolved			103.2		%		80-120	08-NOV-19
Calcium (Ca)-Dissolved			101.1		%		80-120	08-NOV-19
Chromium (Cr)-Dissolved			105.0		%		80-120	08-NOV-19
Cobalt (Co)-Dissolved			103.3		%		80-120	08-NOV-19
Copper (Cu)-Dissolved			102.5		%		80-120	08-NOV-19
Iron (Fe)-Dissolved			98.5		%		80-120	08-NOV-19
Lead (Pb)-Dissolved			98.2		%		80-120	08-NOV-19



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3213868-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			102.8		%		80-120	08-NOV-19
Magnesium (Mg)-Dissolved			102.0		%		80-120	08-NOV-19
Manganese (Mn)-Dissolved			112.2		%		80-120	08-NOV-19
Molybdenum (Mo)-Dissolved			99.8		%		80-120	08-NOV-19
Nickel (Ni)-Dissolved			104.0		%		80-120	08-NOV-19
Potassium (K)-Dissolved			109.1		%		80-120	08-NOV-19
Selenium (Se)-Dissolved			105.7		%		80-120	08-NOV-19
Silicon (Si)-Dissolved			110.0		%		60-140	08-NOV-19
Silver (Ag)-Dissolved			96.3		%		80-120	08-NOV-19
Sodium (Na)-Dissolved			110.7		%		80-120	08-NOV-19
Strontium (Sr)-Dissolved			98.0		%		80-120	08-NOV-19
Thallium (Tl)-Dissolved			97.1		%		80-120	08-NOV-19
Tin (Sn)-Dissolved			96.9		%		80-120	08-NOV-19
Titanium (Ti)-Dissolved			97.7		%		80-120	08-NOV-19
Uranium (U)-Dissolved			95.7		%		80-120	08-NOV-19
Vanadium (V)-Dissolved			105.7		%		80-120	08-NOV-19
Zinc (Zn)-Dissolved			104.2		%		80-120	08-NOV-19
<b>WG3213868-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903856</b>							
<b>WG3213868-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-NOV-19
<b>Batch</b>	<b>R4904974</b>							
<b>WG3215442-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.6		%		80-120	10-NOV-19
Antimony (Sb)-Dissolved			99.4		%		80-120	10-NOV-19
Arsenic (As)-Dissolved			99.9		%		80-120	10-NOV-19
Barium (Ba)-Dissolved			103.5		%		80-120	10-NOV-19
Bismuth (Bi)-Dissolved			103.0		%		80-120	10-NOV-19
Boron (B)-Dissolved			91.1		%		80-120	10-NOV-19
Cadmium (Cd)-Dissolved			102.4		%		80-120	10-NOV-19
Calcium (Ca)-Dissolved			97.8		%		80-120	10-NOV-19
Chromium (Cr)-Dissolved			102.8		%		80-120	10-NOV-19
Cobalt (Co)-Dissolved			101.5		%		80-120	10-NOV-19
Copper (Cu)-Dissolved			100.3		%		80-120	10-NOV-19
Iron (Fe)-Dissolved			101.3		%		80-120	10-NOV-19
Lead (Pb)-Dissolved			101.3		%		80-120	10-NOV-19
Lithium (Li)-Dissolved			96.5		%		80-120	10-NOV-19
Magnesium (Mg)-Dissolved			104.4		%		80-120	10-NOV-19
Manganese (Mn)-Dissolved			102.6		%		80-120	10-NOV-19
Molybdenum (Mo)-Dissolved			98.3		%		80-120	10-NOV-19
Nickel (Ni)-Dissolved			100.2		%		80-120	10-NOV-19



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904974</b>							
<b>WG3215442-2</b>	<b>LCS</b>							
Potassium (K)-Dissolved			102.0		%		80-120	10-NOV-19
Selenium (Se)-Dissolved			101.8		%		80-120	10-NOV-19
Silicon (Si)-Dissolved			100.9		%		60-140	10-NOV-19
Silver (Ag)-Dissolved			99.0		%		80-120	10-NOV-19
Sodium (Na)-Dissolved			101.4		%		80-120	10-NOV-19
Strontium (Sr)-Dissolved			102.0		%		80-120	10-NOV-19
Thallium (Tl)-Dissolved			99.4		%		80-120	10-NOV-19
Tin (Sn)-Dissolved			101.2		%		80-120	10-NOV-19
Titanium (Ti)-Dissolved			97.3		%		80-120	10-NOV-19
Uranium (U)-Dissolved			105.3		%		80-120	10-NOV-19
Vanadium (V)-Dissolved			103.9		%		80-120	10-NOV-19
Zinc (Zn)-Dissolved			100.3		%		80-120	10-NOV-19
<b>WG3215442-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-NOV-19



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4904974</b>							
<b>WG3215442-1</b>	<b>MB</b>	<b>NP</b>						
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-NOV-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4906413</b>							
<b>WG3217773-10</b>	<b>LCS</b>							
Ammonia as N			93.1		%		85-115	13-NOV-19
<b>WG3217773-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-NOV-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903167</b>							
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>							
Nitrite (as N)			98.3		%		90-110	07-NOV-19
<b>WG3214547-6</b>	<b>LCS</b>							
Nitrite (as N)			98.2		%		90-110	07-NOV-19
<b>WG3214547-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-NOV-19
<b>WG3214547-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-NOV-19
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>						
Nitrite (as N)			106.5		%		75-125	07-NOV-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903167</b>							
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>							
Nitrate (as N)			103.1		%		90-110	07-NOV-19
<b>WG3214547-6</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903167</b>							
<b>WG3214547-6</b>	<b>LCS</b>							
Nitrate (as N)			103.2		%		90-110	07-NOV-19
<b>WG3214547-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-NOV-19
<b>WG3214547-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-NOV-19
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>						
Nitrate (as N)			112.3		%		75-125	07-NOV-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4902857</b>							
<b>WG3214166-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	07-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903201</b>							
<b>WG3214384-19</b>	<b>DUP</b>	<b>L2378440-6</b>						
Phosphorus (P)-Total		0.0198	0.0211		mg/L	6.1	20	08-NOV-19
<b>WG3214384-18</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.0		%		80-120	08-NOV-19
<b>WG3214384-17</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-NOV-19
<b>WG3214384-20</b>	<b>MS</b>	<b>L2378440-6</b>						
Phosphorus (P)-Total			96.1		%		70-130	08-NOV-19
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903201</b>							
<b>WG3214384-19</b>	<b>DUP</b>	<b>L2378440-6</b>						
Phosphorus (P)-Total Dissolved		0.0135	0.0164		mg/L	19	20	08-NOV-19
<b>WG3214384-18</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			95.0		%		80-120	08-NOV-19
<b>WG3214384-17</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	08-NOV-19
<b>WG3214384-20</b>	<b>MS</b>	<b>L2378440-6</b>						
Phosphorus (P)-Total Dissolved			82.6		%		70-130	08-NOV-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903372</b>							
<b>WG3214593-8</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	07-NOV-19





## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4902106</b>							
<b>WG3212153-12</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	06-NOV-19
<b>WG3212153-11</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-NOV-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903167</b>							
<b>WG3214547-7</b>	<b>DUP</b>	<b>L2378440-4</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3214547-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.2		%		90-110	07-NOV-19
<b>WG3214547-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.0		%		90-110	07-NOV-19
<b>WG3214547-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-NOV-19
<b>WG3214547-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-NOV-19
<b>WG3214547-8</b>	<b>MS</b>	<b>L2378440-4</b>						
Sulfate (SO4)			113.0		%		75-125	07-NOV-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4904917</b>							
<b>WG3215527-11</b>	<b>LCS</b>							
Total Dissolved Solids			102.0		%		85-115	10-NOV-19
<b>WG3215527-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	10-NOV-19
<b>TEH-BC-VA-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903792</b>							
<b>WG3214149-2</b>	<b>LCS</b>							
EPH10-19			91.5		%		70-130	09-NOV-19
EPH19-32			87.3		%		70-130	09-NOV-19
<b>WG3214149-1</b>	<b>MB</b>							
EPH10-19			<0.25		mg/L		0.25	09-NOV-19
EPH19-32			<0.25		mg/L		0.25	09-NOV-19
Surrogate: 2-Bromobenzotrifluoride			93.8		%		60-140	09-NOV-19
<b>TEH-WATER-VA-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TEH-WATER-VA-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903792</b>							
<b>WG3214149-2</b>	<b>LCS</b>							
TEH (C10-C30)			90.4		%		70-130	09-NOV-19
<b>WG3214149-1</b>	<b>MB</b>							
TEH (C10-C30)			<0.25		mg/L		0.25	09-NOV-19
Surrogate: 2-Bromobenzotrifluoride			93.8		%		60-140	09-NOV-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903001</b>							
<b>WG3214285-23</b>	<b>DUP</b>	<b>L2378440-4</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3214285-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			97.5		%		75-125	08-NOV-19
<b>WG3214285-22</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			98.0		%		75-125	08-NOV-19
<b>WG3214285-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-NOV-19
<b>WG3214285-21</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-NOV-19
<b>WG3214285-24</b>	<b>MS</b>	<b>L2378440-4</b>						
Total Kjeldahl Nitrogen			119.2		%		70-130	08-NOV-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905839</b>							
<b>WG3216494-2</b>	<b>LCS</b>							
Total Suspended Solids			95.8		%		85-115	12-NOV-19
<b>WG3216494-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	12-NOV-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901308</b>							
<b>WG3212642-20</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	06-NOV-19
<b>WG3212642-19</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	06-NOV-19

# Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2378440

Report Date: 15-NOV-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	05-NOV-19 14:55	07-NOV-19 14:00	0.25	47	hours	EHTR-FM
	2	05-NOV-19 15:00	07-NOV-19 15:30	0.25	48	hours	EHTR-FM
	3	05-NOV-19 15:05	07-NOV-19 15:30	0.25	48	hours	EHTR-FM
	4	05-NOV-19 15:10	07-NOV-19 15:30	0.25	48	hours	EHTR-FM
	5	05-NOV-19 14:55	07-NOV-19 15:30	0.25	48	hours	EHTR-FM
	6	05-NOV-19 13:15	07-NOV-19 15:30	0.25	50	hours	EHTR-FM
pH							
	1	05-NOV-19 14:55	07-NOV-19 13:00	0.25	46	hours	EHTR-FM
	2	05-NOV-19 15:00	07-NOV-19 13:00	0.25	46	hours	EHTR-FM
	3	05-NOV-19 15:05	07-NOV-19 13:00	0.25	46	hours	EHTR-FM
	4	05-NOV-19 15:10	07-NOV-19 13:00	0.25	46	hours	EHTR-FM
	5	05-NOV-19 14:55	07-NOV-19 13:00	0.25	46	hours	EHTR-FM
	6	05-NOV-19 13:15	07-NOV-19 13:00	0.25	48	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2378440 were received on 06-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

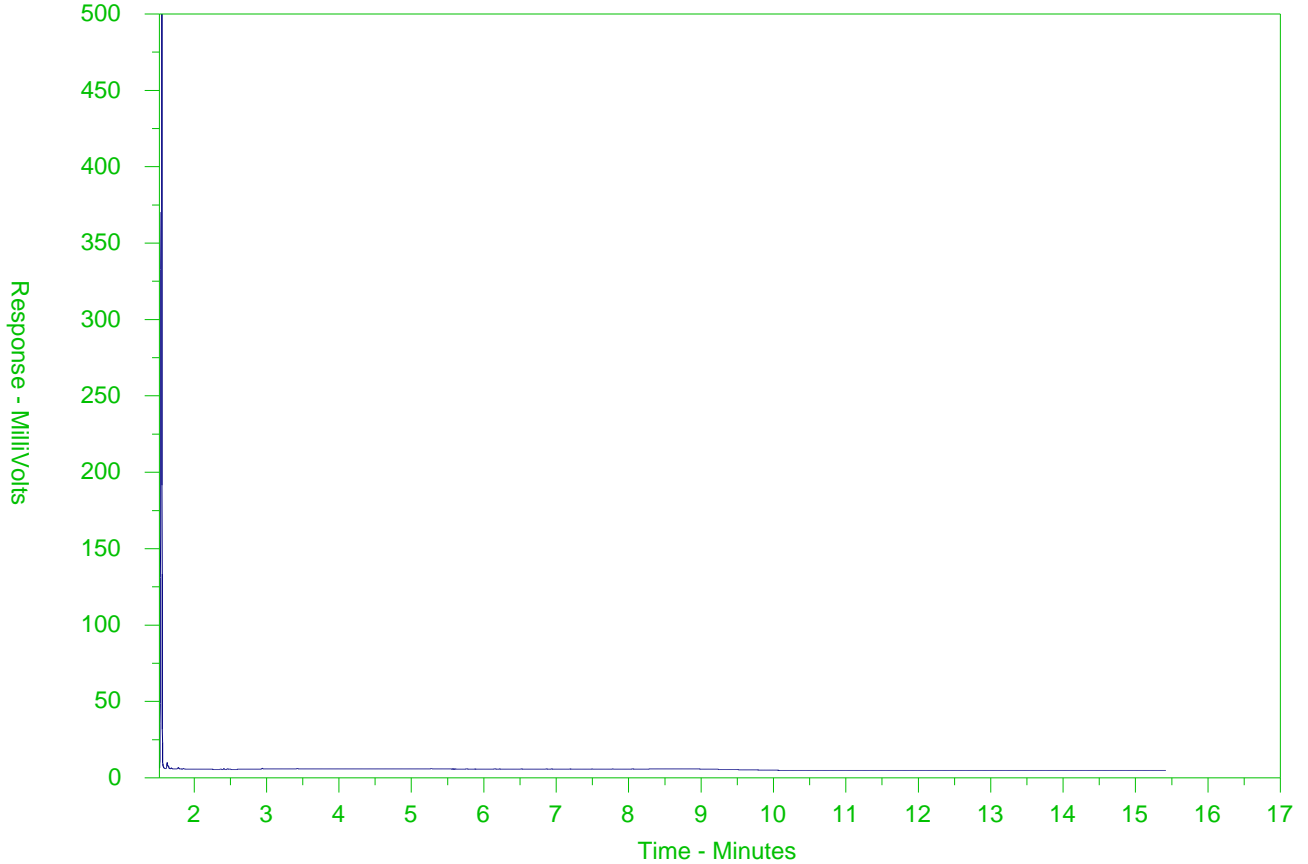
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2378440-1  
 Client Sample ID: EV\_OCGW\_WG\_2019\_Q4\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34	nC50		
174°C	287°C	481°C	575°C		
346°F	549°F	898°F	1067°F		
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

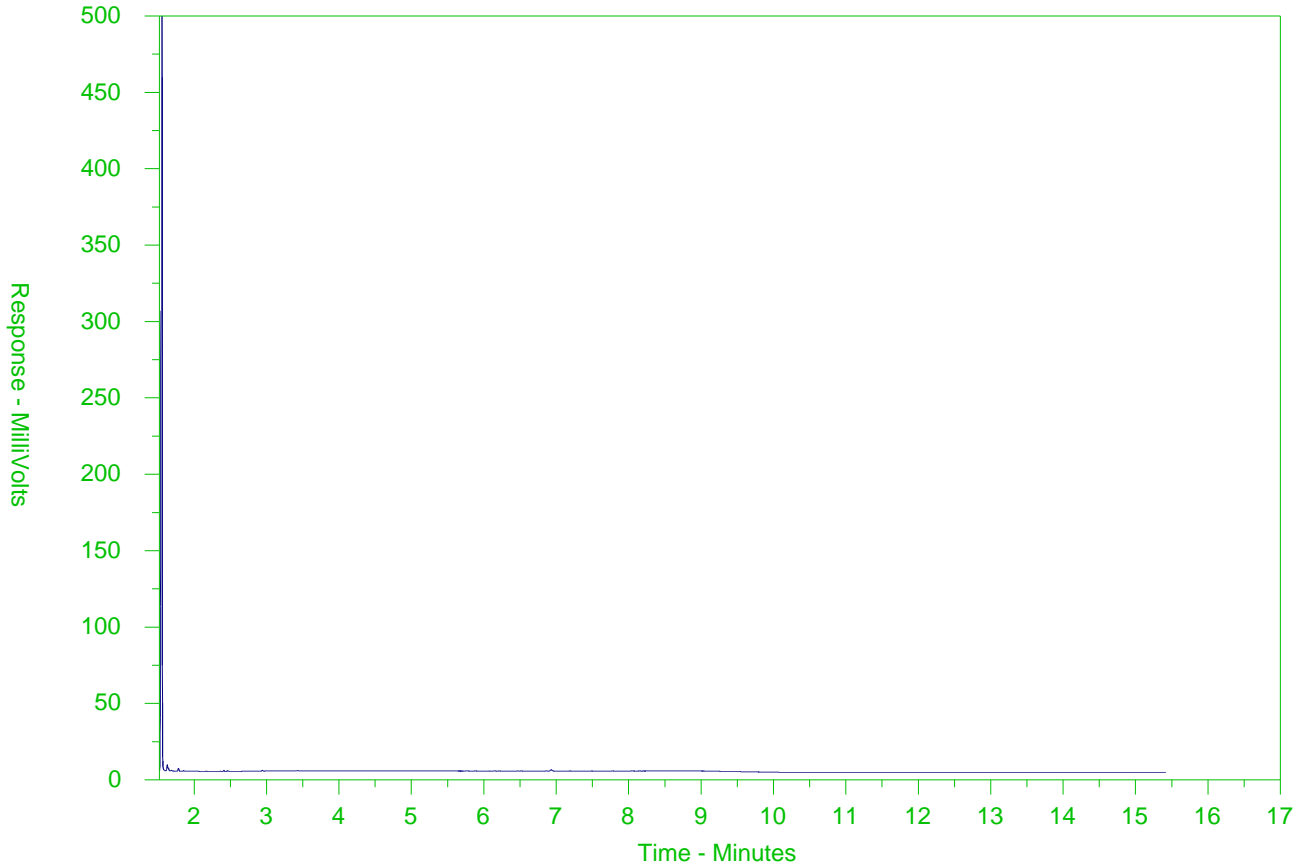
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2378440-2  
 Client Sample ID: EV\_MC5GW\_WG\_2019\_Q4\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34	nC50	
174°C	287°C		481°C	575°C	
346°F	549°F		898°F	1067°F	
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

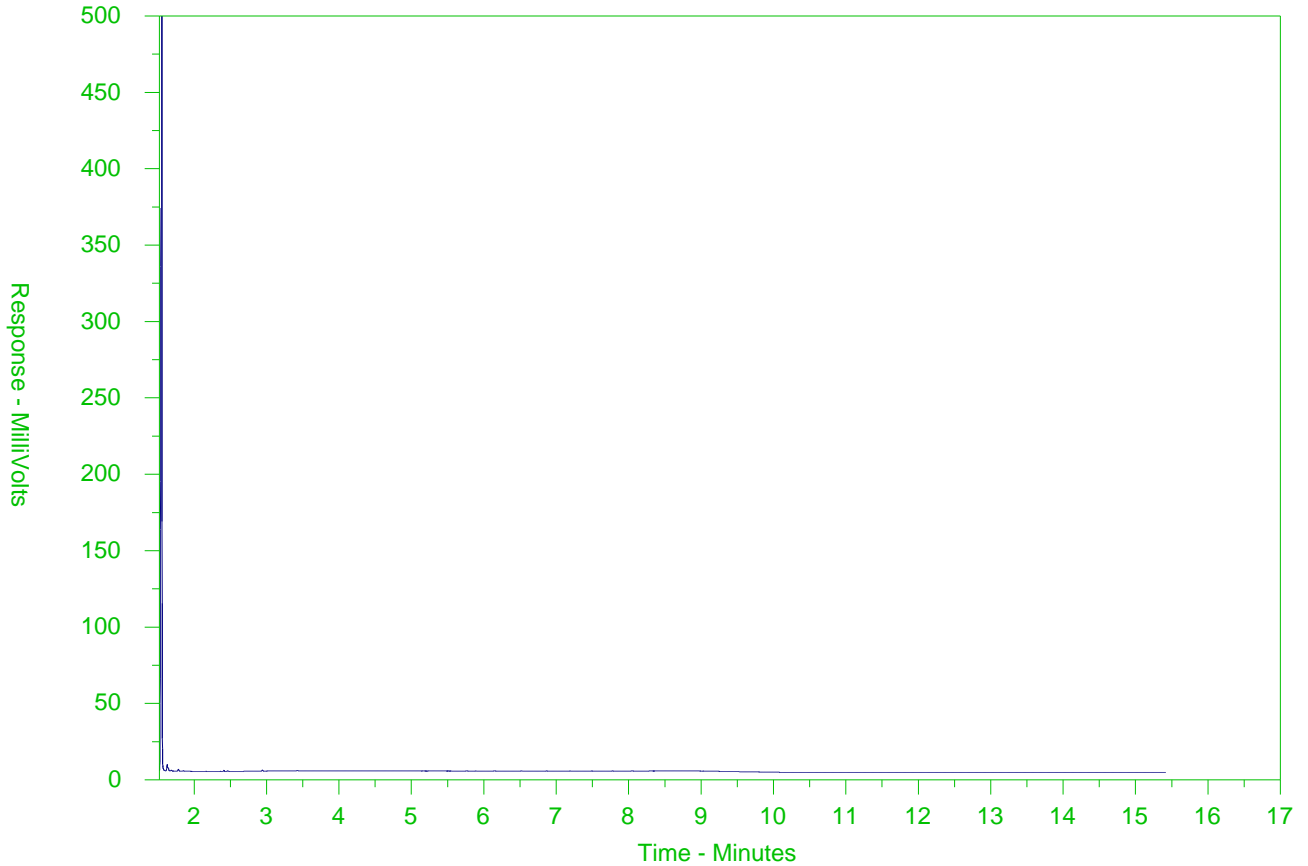
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2378440-3  
 Client Sample ID: EV\_MC6GW\_WG\_2019\_Q4\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34	nC50		
174°C	287°C	481°C	575°C		
346°F	549°F	898°F	1067°F		
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

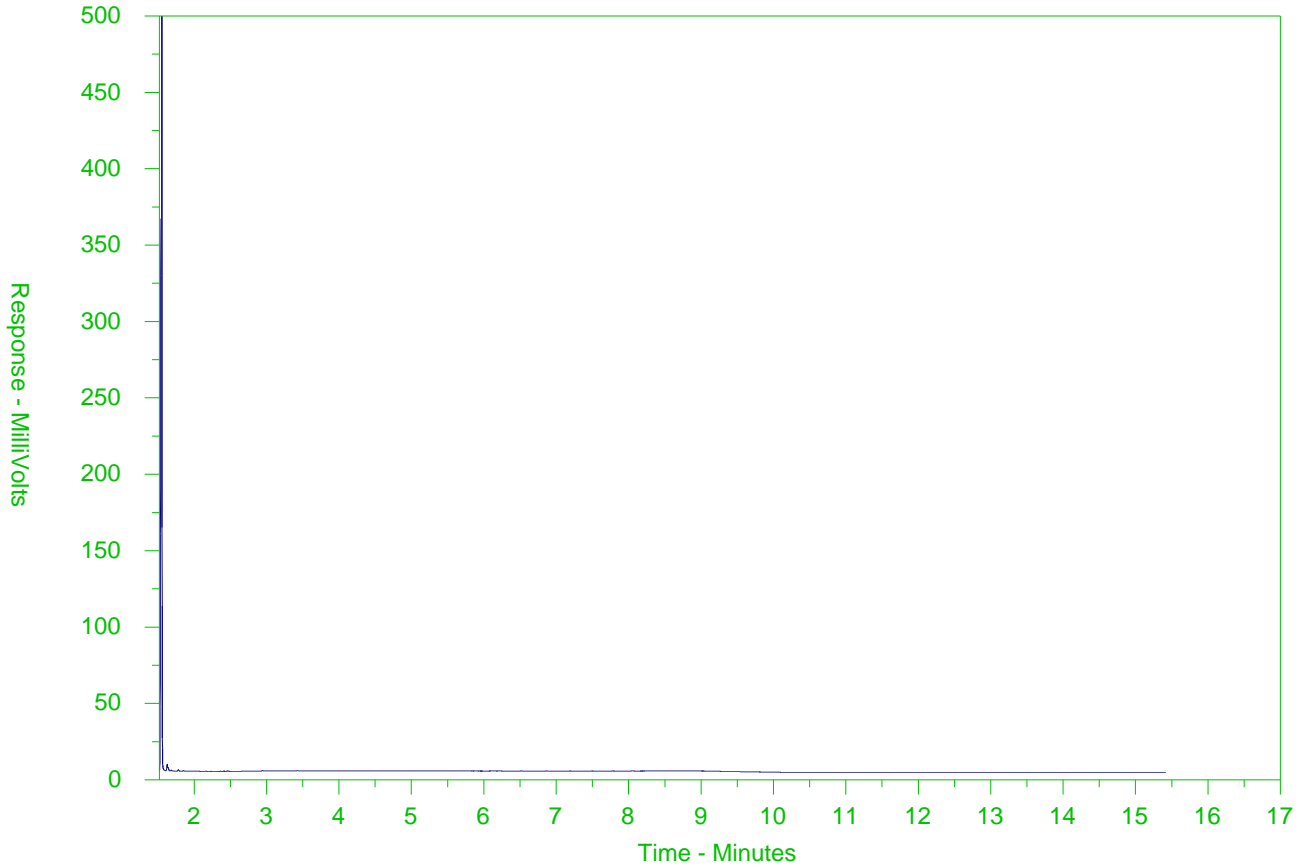
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).



# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2378440-4  
 Client Sample ID: EV\_MC7GW\_WG\_2019\_Q4\_NP



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34	nC50		
174°C	287°C	481°C	575°C		
346°F	549°F	898°F	1067°F		
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).



<b>COC ID:</b> 20191105Q4GW		<b>TURNAROUND TIME:</b>		<b>RUSH:</b>							
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job# Elkview Operations			Lab Name ALS Calgary			Report Format / Distribution			Excel	PDF	EDD
Job Description Q3 Ground Water Sampling			Lab Contact Lyndmyla Shvets			Email 1: kimberley.hackett@teck.com			X	X	X
Project Manager Cameron Griffin			Email lyndmyla.shvets@alsglobal.com			Email 2: cameron.griffin@teck.com			X	X	X
Email Cameron.Griffin@Teck.com			Address 2559 29 Street NE			Email 3: Bryan.ogden@teck.com			X	X	X
Address RR#1 HWY# 3						Email 4: Teck_Lab_Results@arepoint.teck.com			X	X	X
						Email 5: teckcoal@equisonline.com			X	X	X
City Sparwood	Province BC	City Calgary	Province AB								
Postal Code	Country Canada	Postal Code T1Y 7B5	Country Canada								
Phone Number 1-250-865-5289		Phone Number 403-407-1800		PO number	TVPO00610852						

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	No	Yes	Yes	No	No	No	No	No	Yes			
								Nitric	Sulphate	Sulphuric				NO	Sodium Bisulphate	HCl			
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_OCGW_WG_2019_Q4_NP	EV_OCGW	WG	N	11/5/2019	14:55	G	7	1	1	1		1		1	2				
EV_MCSGW_WG_2019_Q4_NP	EV_MCSGW	WG	N	11/5/2019	15:00	G	7	1	1	1		1		1	2				
EV_MC6GW_WG_2019_Q4_NP	EV_MC6GW	WG	N	11/5/2019	15:05	G	7	1	1	1		1		1	2				
EV_MC7GW_WG_2019_Q4_NP	EV_MC7GW	WG	N	11/5/2019	15:10	G	7	1	1	1		1		1	2				
EV_GCGW_WG_2019_Q4_NP	EV_GCGW	WG	N	11/5/2019	14:55	G	5	1	1	1		1				1			
EV_LSGW_WG_2019_Q4_NP	EV_LSGW	WG	N	11/5/2019	13:15	G	5	1	1	1		1				1			
							Total	38											

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
EV_MC7GW - No Dissolved bottles were filtered and no bottles were preserved other than EPH Bottles.	Jason Gravelle	November 5, 2019		11/06 9:00

<b>SERVICE REQUEST (rush - subject to availability)</b>	<b>SAMPLER'S NAME</b>	<b>MOBILE #</b>
Regular (default) X	Kimberley Hackett	
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	<b>DATE/TIME</b>	November 5, 2019

3c



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 07-NOV-19  
Report Date: 15-NOV-19 11:27 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2379223  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191106Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2379223-1				
Description	WG				
Sampled Date	06-NOV-19				
Sampled Time	14:50				
Client ID	EV_BALGW_WG_2019_Q4_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	675			
	Hardness (as CaCO3) (mg/L)	376			
	pH (pH)	7.81			
	ORP (mV)	469			
	Total Suspended Solids (mg/L)	5.9			
	Total Dissolved Solids (mg/L)	481	DLHC		
	Turbidity (NTU)	4.98			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	8.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	353			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	353			
	Ammonia as N (mg/L)	0.160			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.80			
	Fluoride (F) (mg/L)	0.245			
	Ion Balance (%)	101			
	Nitrate (as N) (mg/L)	0.0267			
	Nitrite (as N) (mg/L)	0.0034			
	Total Kjeldahl Nitrogen (mg/L)	0.211			
	Total Nitrogen (mg/L)	0.241			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0020			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0091			
	Phosphorus (P)-Total (mg/L)	0.0096			
	Sulfate (SO4) (mg/L)	96.4			
	Anion Sum (meq/L)	9.12			
	Cation Sum (meq/L)	9.22			
	Cation - Anion Balance (%)	0.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.49			
	Total Organic Carbon (mg/L)	1.54			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00018			
	Barium (Ba)-Dissolved (mg/L)	0.0376			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2379223-1 WG 06-NOV-19 14:50 EV_BALGW_WG_ 2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.168			
	Cadmium (Cd)-Dissolved (ug/L)	0.0051			
	Calcium (Ca)-Dissolved (mg/L)	96.1			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.49			
	Copper (Cu)-Dissolved (mg/L)	0.00035			
	Iron (Fe)-Dissolved (mg/L)	0.206			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.118			
	Magnesium (Mg)-Dissolved (mg/L)	32.9			
	Manganese (Mn)-Dissolved (mg/L)	0.0887			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000300			
	Nickel (Ni)-Dissolved (mg/L)	0.00120			
	Potassium (K)-Dissolved (mg/L)	2.98			
	Selenium (Se)-Dissolved (ug/L)	0.105			
	Silicon (Si)-Dissolved (mg/L)	4.51			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	37.4			
	Strontium (Sr)-Dissolved (mg/L)	2.34			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000126			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0060			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379223-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379223-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2379223-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379223-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2379223-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379223-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379223-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2379223-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA**      Water      Hardness      APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA**      Water      Diss. Mercury in Water by CVAAS or CVAFS      APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA**      Water      Dissolved Metals in Water by CRC ICPMS      APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL**      Water      Total Nitrogen (Calculation)      APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL**      Water      Ammonia, Total (as N)      J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL**      Water      Nitrite in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL**      Water      Nitrate in Water by IC (Low Level)      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**      Water      Oxidation reduction potential by elect.      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**      Water      Phosphorus (P)-Total      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**      Water      Phosphorus (P)-Total Dissolved      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**      Water      pH      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**      Water      Orthophosphate-Dissolved (as P)      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**      Water      Sulfate in Water by IC      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

## Reference Information

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20191106Q4GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903797</b>							
<b>WG3215184-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			95.0		%		85-115	08-NOV-19
<b>WG3215184-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	08-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903794</b>							
<b>WG3215187-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.9		%		85-115	08-NOV-19
<b>WG3215187-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904824</b>							
<b>WG3215696-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.5		%		80-120	12-NOV-19
<b>WG3215696-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902981</b>							
<b>WG3214358-10</b>	<b>LCS</b>							
Bromide (Br)			100.2		%		85-115	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903708</b>							
<b>WG3215208-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.0		%		80-120	08-NOV-19
<b>WG3215208-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-NOV-19
<b>WG3215208-8</b>	<b>MS</b>	<b>L2379223-1</b>						
Dissolved Organic Carbon			98.8		%		70-130	08-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903708</b>							
<b>WG3215208-6</b>	<b>LCS</b>							
Total Organic Carbon			106.0		%		80-120	08-NOV-19
<b>WG3215208-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-NOV-19
<b>WG3215208-8</b>	<b>MS</b>	<b>L2379223-1</b>						





## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch R4903708								
<b>WG3215208-8 MS</b>		<b>L2379223-1</b>						
Total Organic Carbon			100.2		%		70-130	08-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch R4902981								
<b>WG3214358-10 LCS</b>								
Chloride (Cl)			100.9		%		90-110	07-NOV-19
<b>WG3214358-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch R4903794								
<b>WG3215187-11 LCS</b>								
Conductivity (@ 25C)			96.2		%		90-110	08-NOV-19
<b>WG3215187-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch R4902981								
<b>WG3214358-10 LCS</b>								
Fluoride (F)			106.7		%		90-110	07-NOV-19
<b>WG3214358-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	07-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch R4908847								
<b>WG3219184-2 LCS</b>								
Mercury (Hg)-Dissolved			101.9		%		80-120	15-NOV-19
<b>WG3219184-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch R4904824								
<b>WG3215696-2 LCS</b>								
Aluminum (Al)-Dissolved			102.1		%		80-120	12-NOV-19
Antimony (Sb)-Dissolved			97.4		%		80-120	12-NOV-19
Arsenic (As)-Dissolved			97.7		%		80-120	12-NOV-19
Barium (Ba)-Dissolved			98.5		%		80-120	12-NOV-19
Bismuth (Bi)-Dissolved			97.4		%		80-120	12-NOV-19
Boron (B)-Dissolved			101.9		%		80-120	12-NOV-19
Cadmium (Cd)-Dissolved			97.9		%		80-120	12-NOV-19



## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904824</b>							
<b>WG3215696-2</b>	<b>LCS</b>							
Calcium (Ca)-Dissolved			103.1		%		80-120	12-NOV-19
Chromium (Cr)-Dissolved			101.2		%		80-120	12-NOV-19
Cobalt (Co)-Dissolved			98.0		%		80-120	12-NOV-19
Copper (Cu)-Dissolved			97.1		%		80-120	12-NOV-19
Iron (Fe)-Dissolved			106.8		%		80-120	12-NOV-19
Lead (Pb)-Dissolved			97.2		%		80-120	12-NOV-19
Lithium (Li)-Dissolved			94.4		%		80-120	12-NOV-19
Magnesium (Mg)-Dissolved			101.7		%		80-120	12-NOV-19
Manganese (Mn)-Dissolved			99.4		%		80-120	12-NOV-19
Molybdenum (Mo)-Dissolved			101.4		%		80-120	12-NOV-19
Nickel (Ni)-Dissolved			95.9		%		80-120	12-NOV-19
Potassium (K)-Dissolved			102.1		%		80-120	12-NOV-19
Selenium (Se)-Dissolved			100.4		%		80-120	12-NOV-19
Silicon (Si)-Dissolved			100.9		%		60-140	12-NOV-19
Silver (Ag)-Dissolved			99.9		%		80-120	12-NOV-19
Sodium (Na)-Dissolved			102.0		%		80-120	12-NOV-19
Strontium (Sr)-Dissolved			101.3		%		80-120	12-NOV-19
Thallium (Tl)-Dissolved			94.7		%		80-120	12-NOV-19
Tin (Sn)-Dissolved			97.6		%		80-120	12-NOV-19
Titanium (Ti)-Dissolved			101.7		%		80-120	12-NOV-19
Uranium (U)-Dissolved			99.8		%		80-120	12-NOV-19
Vanadium (V)-Dissolved			99.7		%		80-120	12-NOV-19
Zinc (Zn)-Dissolved			100.7		%		80-120	12-NOV-19
<b>WG3215696-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19



## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904824</b>							
<b>WG3215696-1</b>	<b>MB</b>	<b>NP</b>						
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906413</b>							
<b>WG3217773-42</b>	<b>LCS</b>							
Ammonia as N			93.4		%		85-115	13-NOV-19
<b>WG3217773-41</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902981</b>							
<b>WG3214358-10</b>	<b>LCS</b>							
Nitrite (as N)			102.0		%		90-110	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10</b>	<b>LCS</b>							
Nitrate (as N)			101.3		%		90-110	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4903603							
<b>WG3214902-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	08-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4903905							
<b>WG3215416-28</b>	<b>DUP</b>	<b>L2379223-1</b>						
Phosphorus (P)-Total		0.0096	0.0098		mg/L	2.4	20	10-NOV-19
<b>WG3215416-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.6		%		80-120	10-NOV-19
<b>WG3215416-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-NOV-19
<b>WG3215416-27</b>	<b>MS</b>	<b>L2379223-1</b>						
Phosphorus (P)-Total			117.7		%		70-130	10-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4903905							
<b>WG3215416-28</b>	<b>DUP</b>	<b>L2379223-1</b>						
Phosphorus (P)-Total Dissolved		0.0091	0.0095		mg/L	4.6	20	10-NOV-19
<b>WG3215416-26</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			98.6		%		80-120	10-NOV-19
<b>WG3215416-25</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	10-NOV-19
<b>WG3215416-27</b>	<b>MS</b>	<b>L2379223-1</b>						
Phosphorus (P)-Total Dissolved			115.7		%		70-130	10-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4903794							
<b>WG3215187-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	08-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4903541							
<b>WG3214522-2 LCS</b>								
Orthophosphate-Dissolved (as P)			97.6		%		80-120	08-NOV-19
<b>WG3214522-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10 LCS</b>								
Sulfate (SO4)			101.2		%		90-110	07-NOV-19
<b>WG3214358-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	07-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4905928							
<b>WG3216312-20 LCS</b>								
Total Dissolved Solids			98.9		%		85-115	12-NOV-19
<b>WG3216312-19 MB</b>								
Total Dissolved Solids			<10		mg/L		10	12-NOV-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4903830							
<b>WG3215247-30 LCS</b>								
Total Kjeldahl Nitrogen			92.4		%		75-125	09-NOV-19
<b>WG3215247-29 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4905839							
<b>WG3216494-10 LCS</b>								
Total Suspended Solids			94.6		%		85-115	12-NOV-19
<b>WG3216494-9 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	12-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4902867							
<b>WG3214162-11 LCS</b>								
Turbidity			97.0		%		85-115	07-NOV-19
<b>WG3214162-10 MB</b>								
Turbidity			<0.10		NTU		0.1	07-NOV-19

# Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2379223

Report Date: 15-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	06-NOV-19 14:50	08-NOV-19 13:15	0.25	46	hours	EHTR-FM
pH	1	06-NOV-19 14:50	08-NOV-19 14:00	0.25	47	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2379223 were received on 07-NOV-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Teck

COC ID: 20191106Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS

ANALYSIS REQUESTED



L2379223-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Materi.	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	
BALGW_WG 2019_Q4_NP	EV_BALGW	WG	N	11/6/2019	14:50	G	5	
							Total	5

PRESERVE	ANALYSIS REQUESTED									
	No	Yes	Yes	No	No	No	No	Yes		
		Nitric	Sulphuric	Sulphuric		NO	Sodium Bisulphate	HCl		
ANALYSIS	TECK COAL-ROUTINE-VA (E305.1)									
	TECK COAL-MET-D-VA (SW6020)									
	DOC (APHA 5310)									
	Dissolved Phosphorus									
	TKN/TOC (APHA 4500-NORG)									
	Total Nitrogen for BC (NO2 and NO3)									
	T-ULTRA MERCURY (SW6020)									
	D-ULTRA MERCURY (SW6020)									
	EPH (C10-C32)									
	D-Mercury									
T-Mercury										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MC7GW - No Dissolved bottles were filtered and no bottles were perserved other than EPH Bottles.	Jason Gravelle	November 6 2019	<i>[Signature]</i>	11/7/19 <i>[Signature]</i>

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett		<i>[Signature]</i>	November 6 2019

Go to avery.com/templates Use Avery Template 5164

TrueBlock Shipping Labels Completely covers everything underneath

5164

AVERY

Allez à avery.ca/gabarits Utilisez le Gabarit Avery 5164

Trueblock Étiquettes d'expédition Masque tout

Pat. avery.com/patents





Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 08-NOV-19  
Report Date: 18-NOV-19 08:41 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2379720  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191107Q4GW  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2379720-1 WG 07-NOV-19 11:47 EV_ER1GWS_WG_2019_Q4_NP	L2379720-2 WG 07-NOV-19 13:20 EV_ER1GWD_WG_2019_Q4_NP	L2379720-3 WG 07-NOV-19 11:47 EV_EC5GW_WG_2019_Q4_NP	L2379720-4 WG 07-NOV-19 11:47 EV_EC6GW_WG_2019_Q4_NP	L2379720-5 WG 07-NOV-19 11:47 EV_EC7GW_WG_2019_Q4_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	380	366	381	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	249	253	254	<0.50	<0.50
	pH (pH)	8.18	8.25	8.29	5.49	5.43
	ORP (mV)	500	408	518	433	426
	Total Suspended Solids (mg/L)	<1.0	22.5	2.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	276 <sup>DLHC</sup>	240 <sup>DLHC</sup>	284 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)	0.89	11.7	0.83	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.7	1.1	<1.0	1.6	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	171	217	177	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	171	217	177	<1.0	<1.0
	Ammonia as N (mg/L)	<0.0050	<0.0050	0.0089	<0.0050	<0.0050
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	3.71	6.95	3.63	<0.50	<0.50
	Fluoride (F) (mg/L)	0.207	0.266	0.207	<0.020	<0.020
	Ion Balance (%)	98.2	103	97.8	0.0	0.0
	Nitrate (as N) (mg/L)	1.86	0.394	1.89	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.223	0.194	0.197	<0.050	<0.050
	Total Nitrogen (mg/L)	2.08	0.588	2.09	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0018	0.0038 <sup>RRV</sup>	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	<0.0020	<0.0020 <sup>RRV</sup>	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0036	0.0279	0.0028 <sup>RRV</sup>	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	74.9	23.9	76.1	<0.30	<0.30
	Anion Sum (meq/L)	5.23	5.06	5.37	<0.10	<0.10
	Cation Sum (meq/L)	5.14	5.21	5.25	<0.10	<0.10
	Cation - Anion Balance (%)	-0.9	1.4	-1.1	0.0	0.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	LAB
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	0.0070	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00014	0.00012	0.00012	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.104	0.0980	0.109	0.00029 <sup>RRV</sup>	<0.00010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2379720-1 WG 07-NOV-19 11:47 EV_ER1GWS_WG_2019_Q4_NP	L2379720-2 WG 07-NOV-19 13:20 EV_ER1GWD_WG_2019_Q4_NP	L2379720-3 WG 07-NOV-19 11:47 EV_EC5GW_WG_2019_Q4_NP	L2379720-4 WG 07-NOV-19 11:47 EV_EC6GW_WG_2019_Q4_NP	L2379720-5 WG 07-NOV-19 11:47 EV_EC7GW_WG_2019_Q4_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)	0.0105	<0.0050	0.0096	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	67.3	67.1	68.5	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)	0.00030	0.00176	0.00024	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00031	0.00033	0.00034	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0070	0.0073	0.0072	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	19.6	20.7	20.2	<0.10	<0.10
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.0104	<0.00010	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00122	0.00171	0.00124	<0.000050	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)	0.720	0.738	0.746	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)	10.3	1.44	10.2	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)	2.15	3.74	2.11	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.36	3.25	3.53	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.198	0.199	0.198	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00112	0.00143	0.00114	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010	0.0013	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
SFPL	Sample was Filtered and Preserved at the laboratory - -5 EV_EC7GW: D-NUT/D-METAL/D-HG FILTERED AND PRESERVED AT THE LAB

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Tin (Sn)-Dissolved	B	L2379720-5
Method Blank	Tin (Sn)-Dissolved	B	L2379720-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379720-5
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379720-4
Matrix Spike	Boron (B)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379720-5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379720-4
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379720-5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379720-4
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379720-5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379720-4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379720-5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379720-1, -2, -3, -4
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379720-4

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon			

## Reference Information

dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum

## Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20191107Q4GW

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 1 of 13

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904014</b>							
<b>WG3215490-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	09-NOV-19
<b>WG3215490-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	09-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904007</b>							
<b>WG3215492-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.2		%		85-115	09-NOV-19
<b>WG3215492-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905187</b>							
<b>WG3215659-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			102.2		%		80-120	12-NOV-19
<b>WG3215659-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	12-NOV-19
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.1		%		80-120	13-NOV-19
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903738</b>							
<b>WG3215223-7</b>	<b>DUP</b>	<b>L2379720-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215223-6</b>	<b>LCS</b>							
Bromide (Br)			101.4		%		85-115	08-NOV-19
<b>WG3215223-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	08-NOV-19
<b>WG3215223-8</b>	<b>MS</b>	<b>L2379720-5</b>						
Bromide (Br)			112.3		%		75-125	08-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904084</b>							
<b>WG3215681-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			91.4		%		80-120	09-NOV-19
<b>WG3215681-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	09-NOV-19







## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903738</b>							
<b>WG3215223-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	08-NOV-19
<b>WG3215223-8</b>	<b>MS</b>	<b>L2379720-5</b>						
Fluoride (F)			111.5		%		75-125	08-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4906310</b>							
<b>WG3218725-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.8		%		80-120	14-NOV-19
<b>WG3218725-5</b>	<b>MB</b>	<b>LF</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	14-NOV-19
<b>Batch</b>	<b>R4908847</b>							
<b>WG3219184-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.7		%		80-120	15-NOV-19
<b>WG3219184-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.7		%		80-120	15-NOV-19
<b>WG3219184-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-NOV-19
<b>WG3219184-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4905187</b>							
<b>WG3215659-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.8		%		80-120	12-NOV-19
Antimony (Sb)-Dissolved			96.8		%		80-120	12-NOV-19
Arsenic (As)-Dissolved			100.2		%		80-120	12-NOV-19
Barium (Ba)-Dissolved			99.1		%		80-120	12-NOV-19
Bismuth (Bi)-Dissolved			99.3		%		80-120	12-NOV-19
Boron (B)-Dissolved			98.0		%		80-120	12-NOV-19
Cadmium (Cd)-Dissolved			94.2		%		80-120	12-NOV-19
Calcium (Ca)-Dissolved			100.0		%		80-120	12-NOV-19
Chromium (Cr)-Dissolved			103.1		%		80-120	12-NOV-19
Cobalt (Co)-Dissolved			101.4		%		80-120	12-NOV-19
Copper (Cu)-Dissolved			99.0		%		80-120	12-NOV-19
Iron (Fe)-Dissolved			101.2		%		80-120	12-NOV-19
Lead (Pb)-Dissolved			97.9		%		80-120	12-NOV-19
Lithium (Li)-Dissolved			102.3		%		80-120	12-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905187</b>							
<b>WG3215659-2</b>	<b>LCS</b>							
Magnesium (Mg)-Dissolved			101.1		%		80-120	12-NOV-19
Manganese (Mn)-Dissolved			100.2		%		80-120	12-NOV-19
Molybdenum (Mo)-Dissolved			99.1		%		80-120	12-NOV-19
Nickel (Ni)-Dissolved			100.4		%		80-120	12-NOV-19
Potassium (K)-Dissolved			102.7		%		80-120	12-NOV-19
Selenium (Se)-Dissolved			106.3		%		80-120	12-NOV-19
Silicon (Si)-Dissolved			110.0		%		60-140	12-NOV-19
Silver (Ag)-Dissolved			95.5		%		80-120	12-NOV-19
Sodium (Na)-Dissolved			105.2		%		80-120	12-NOV-19
Strontium (Sr)-Dissolved			94.2		%		80-120	12-NOV-19
Thallium (Tl)-Dissolved			97.9		%		80-120	12-NOV-19
Tin (Sn)-Dissolved			97.6		%		80-120	12-NOV-19
Titanium (Ti)-Dissolved			97.2		%		80-120	12-NOV-19
Uranium (U)-Dissolved			92.1		%		80-120	12-NOV-19
Vanadium (V)-Dissolved			103.8		%		80-120	12-NOV-19
Zinc (Zn)-Dissolved			99.0		%		80-120	12-NOV-19
<b>WG3215659-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	12-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	12-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	12-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	12-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	12-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	12-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905187</b>							
<b>WG3215659-1</b>	<b>MB</b>	<b>LF</b>						
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	12-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	12-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	12-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	12-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Tin (Sn)-Dissolved			0.00013	B	mg/L		0.0001	12-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	12-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	12-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	12-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-NOV-19
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.5		%		80-120	13-NOV-19
Antimony (Sb)-Dissolved			92.2		%		80-120	13-NOV-19
Arsenic (As)-Dissolved			93.3		%		80-120	13-NOV-19
Barium (Ba)-Dissolved			96.9		%		80-120	13-NOV-19
Bismuth (Bi)-Dissolved			97.3		%		80-120	13-NOV-19
Boron (B)-Dissolved			94.9		%		80-120	13-NOV-19
Cadmium (Cd)-Dissolved			92.1		%		80-120	13-NOV-19
Calcium (Ca)-Dissolved			99.9		%		80-120	13-NOV-19
Chromium (Cr)-Dissolved			93.7		%		80-120	13-NOV-19
Cobalt (Co)-Dissolved			91.3		%		80-120	13-NOV-19
Copper (Cu)-Dissolved			91.6		%		80-120	13-NOV-19
Iron (Fe)-Dissolved			88.5		%		80-120	13-NOV-19
Lead (Pb)-Dissolved			99.0		%		80-120	13-NOV-19
Lithium (Li)-Dissolved			92.2		%		80-120	13-NOV-19
Magnesium (Mg)-Dissolved			92.0		%		80-120	13-NOV-19
Manganese (Mn)-Dissolved			96.6		%		80-120	13-NOV-19
Molybdenum (Mo)-Dissolved			95.2		%		80-120	13-NOV-19
Nickel (Ni)-Dissolved			90.9		%		80-120	13-NOV-19
Potassium (K)-Dissolved			93.7		%		80-120	13-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			98.2		%		80-120	13-NOV-19
Silicon (Si)-Dissolved			101.1		%		60-140	13-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	13-NOV-19
Sodium (Na)-Dissolved			96.3		%		80-120	13-NOV-19
Strontium (Sr)-Dissolved			93.4		%		80-120	13-NOV-19
Thallium (Tl)-Dissolved			96.1		%		80-120	13-NOV-19
Tin (Sn)-Dissolved			92.2		%		80-120	13-NOV-19
Titanium (Ti)-Dissolved			89.3		%		80-120	13-NOV-19
Uranium (U)-Dissolved			97.0		%		80-120	13-NOV-19
Vanadium (V)-Dissolved			95.1		%		80-120	13-NOV-19
Zinc (Zn)-Dissolved			88.3		%		80-120	13-NOV-19
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Tin (Sn)-Dissolved			0.00011	B	mg/L		0.0001	13-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.9		%		80-120	13-NOV-19
Antimony (Sb)-Dissolved			100.9		%		80-120	13-NOV-19
Arsenic (As)-Dissolved			100.1		%		80-120	13-NOV-19
Barium (Ba)-Dissolved			96.8		%		80-120	13-NOV-19
Bismuth (Bi)-Dissolved			101.5		%		80-120	13-NOV-19
Boron (B)-Dissolved			96.6		%		80-120	13-NOV-19
Cadmium (Cd)-Dissolved			99.9		%		80-120	13-NOV-19
Calcium (Ca)-Dissolved			96.9		%		80-120	13-NOV-19
Chromium (Cr)-Dissolved			99.8		%		80-120	13-NOV-19
Cobalt (Co)-Dissolved			100.8		%		80-120	13-NOV-19
Copper (Cu)-Dissolved			98.1		%		80-120	13-NOV-19
Iron (Fe)-Dissolved			95.9		%		80-120	13-NOV-19
Lead (Pb)-Dissolved			98.1		%		80-120	13-NOV-19
Lithium (Li)-Dissolved			96.5		%		80-120	13-NOV-19
Magnesium (Mg)-Dissolved			97.0		%		80-120	13-NOV-19
Manganese (Mn)-Dissolved			97.6		%		80-120	13-NOV-19
Molybdenum (Mo)-Dissolved			104.2		%		80-120	13-NOV-19
Nickel (Ni)-Dissolved			100.3		%		80-120	13-NOV-19
Potassium (K)-Dissolved			103.9		%		80-120	13-NOV-19
Selenium (Se)-Dissolved			98.0		%		80-120	13-NOV-19
Silicon (Si)-Dissolved			100.5		%		60-140	13-NOV-19
Silver (Ag)-Dissolved			101.0		%		80-120	13-NOV-19
Sodium (Na)-Dissolved			104.6		%		80-120	13-NOV-19
Strontium (Sr)-Dissolved			106.6		%		80-120	13-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-2</b>	<b>LCS</b>							
Thallium (Tl)-Dissolved			97.7		%		80-120	13-NOV-19
Tin (Sn)-Dissolved			99.9		%		80-120	13-NOV-19
Titanium (Ti)-Dissolved			102.7		%		80-120	13-NOV-19
Uranium (U)-Dissolved			100.8		%		80-120	13-NOV-19
Vanadium (V)-Dissolved			99.6		%		80-120	13-NOV-19
Zinc (Zn)-Dissolved			99.2		%		80-120	13-NOV-19
<b>WG3217491-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-NOV-19



## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-1</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909057</b>							
<b>WG3219029-27</b>	<b>DUP</b>	<b>L2379720-2</b>						
Ammonia as N		<0.0050	0.0070	RPD-NA	mg/L	N/A	20	14-NOV-19
<b>WG3219029-18</b>	<b>LCS</b>							
Ammonia as N			88.5		%		85-115	14-NOV-19
<b>WG3219029-22</b>	<b>LCS</b>							
Ammonia as N			91.8		%		85-115	14-NOV-19
<b>WG3219029-26</b>	<b>LCS</b>							
Ammonia as N			92.4		%		85-115	14-NOV-19
<b>WG3219029-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-19
<b>WG3219029-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-19
<b>WG3219029-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-19
<b>WG3219029-28</b>	<b>MS</b>	<b>L2379720-2</b>						
Ammonia as N			93.6		%		75-125	14-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903738</b>							
<b>WG3215223-7</b>	<b>DUP</b>	<b>L2379720-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215223-6</b>	<b>LCS</b>							
Nitrite (as N)			101.4		%		90-110	08-NOV-19
<b>WG3215223-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	08-NOV-19
<b>WG3215223-8</b>	<b>MS</b>	<b>L2379720-5</b>						
Nitrite (as N)			111.9		%		75-125	08-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903738</b>							
<b>WG3215223-7</b>	<b>DUP</b>	<b>L2379720-5</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	08-NOV-19
<b>WG3215223-6</b>	<b>LCS</b>							
Nitrate (as N)			100.9		%		90-110	08-NOV-19







## Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903738</b>							
<b>WG3215223-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.8		%		90-110	08-NOV-19
<b>WG3215223-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	08-NOV-19
<b>WG3215223-8</b>	<b>MS</b>	<b>L2379720-5</b>						
Sulfate (SO4)			110.5		%		75-125	08-NOV-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4909193</b>							
<b>WG3216923-8</b>	<b>LCS</b>							
Total Dissolved Solids			98.2		%		85-115	13-NOV-19
<b>WG3216923-7</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	13-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903830</b>							
<b>WG3215247-47</b>	<b>DUP</b>	<b>L2379720-4</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-NOV-19
<b>WG3215247-46</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			91.7		%		75-125	12-NOV-19
<b>WG3215247-45</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-NOV-19
<b>WG3215247-48</b>	<b>MS</b>	<b>L2379720-4</b>						
Total Kjeldahl Nitrogen			103.3		%		70-130	09-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4907025</b>							
<b>WG3216835-4</b>	<b>LCS</b>							
Total Suspended Solids			91.1		%		85-115	13-NOV-19
<b>WG3216835-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4903594</b>							
<b>WG3214636-11</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	08-NOV-19
<b>WG3214636-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-NOV-19

# Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2379720

Report Date: 18-NOV-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	07-NOV-19 11:47	08-NOV-19 17:00	0.25	29	hours	EHTR-FM
	2	07-NOV-19 13:20	08-NOV-19 17:00	0.25	28	hours	EHTR-FM
	3	07-NOV-19 11:47	08-NOV-19 17:00	0.25	29	hours	EHTR-FM
	4	07-NOV-19 11:47	08-NOV-19 17:00	0.25	29	hours	EHTR-FM
	5	07-NOV-19 11:47	08-NOV-19 17:00	0.25	29	hours	EHTR-FM
pH							
	1	07-NOV-19 11:47	09-NOV-19 09:00	0.25	45	hours	EHTR-FM
	2	07-NOV-19 13:20	09-NOV-19 09:00	0.25	44	hours	EHTR-FM
	3	07-NOV-19 11:47	09-NOV-19 09:00	0.25	45	hours	EHTR-FM
	4	07-NOV-19 11:47	09-NOV-19 09:00	0.25	45	hours	EHTR-FM
	5	07-NOV-19 11:47	09-NOV-19 09:00	0.25	45	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2379720 were received on 08-NOV-19 08:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20191107Q4GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Formal / Distribution		Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com		X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com		X	X	X
								Email 5:	teckcoal@equisonline.com				
City	Sparwood	Province	BC	City	Calgary	Province	AB						
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada						
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number			VPO00610852		

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_ERIGWS_WG_2019_Q4_NP	EV_ERIGWS	WG	N	11/7/2019	11:47	G	5	1	1	1		1					1		
EV_ERIGWD_WG_2019_Q4_NP	EV_ERIGWD	WG	N	11/7/2019	13:20	G	5	1	1	1		1					1		
EV_EC5GW_WG_2019_Q4_NP	EV_EC5GW	WG	N	11/7/2019	11:47	G	5	1	1	1		1					1		
EV_EC6GW_WG_2019_Q4_NP	EV_EC6GW	WG	N	11/7/2019	11:47	G	5	1	1	1		1					1		
EV_EC7GW_WG_2019_Q4_NP	EV_EC7GW	WG	N	11/7/2019	11:47	G	5	1	1	1		1					1		
							Total	25											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_EC7GW - No Dissolved bottles were filtered and no bottles were preserved.	Kimberley Hackett	November 7, 2019		11/08 8:30
SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) <input checked="" type="checkbox"/>	Kimberley Hackett			November 7, 2019
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Ac



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 08-NOV-19  
Report Date: 18-NOV-19 08:49 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2379775  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191107Q4POT  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2379775-1	L2379775-2		
		Description	WG	WG		
		Sampled Date	07-NOV-19	07-NOV-19		
		Sampled Time	15:45	15:25		
		Client ID	EV_BRGW_WG_2 019_Q4_NP	EV_WH50GW_WG _2019_Q4_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		1030	401		
	Hardness (as CaCO3) (mg/L)		669	240		
	pH (pH)		8.09	8.30		
	ORP (mV)		431	356		
	Total Suspended Solids (mg/L)		<1.0	5.3		
	Total Dissolved Solids (mg/L)		950 <sup>DLHC</sup>	310 <sup>DLHC</sup>		
	Turbidity (NTU)		0.98	14.6		
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		8.1	<1.0		
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		275	167		
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0		
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0		
	Alkalinity, Total (as CaCO3) (mg/L)		275	167		
	Ammonia as N (mg/L)		<0.0050	<0.0050		
	Bromide (Br) (mg/L)		0.83 <sup>DLHC</sup>	<0.050		
	Chloride (Cl) (mg/L)		40.1 <sup>DLHC</sup>	2.36		
	Fluoride (F) (mg/L)		<0.10 <sup>DLHC</sup>	0.113		
	Ion Balance (%)		92.7	89.9		
	Nitrate (as N) (mg/L)		5.31 <sup>DLHC</sup>	1.26		
	Nitrite (as N) (mg/L)		<0.0050 <sup>DLHC</sup>	<0.0010		
	Total Kjeldahl Nitrogen (mg/L)		<0.050 <sup>TKNI</sup>	0.376		
	Total Nitrogen (mg/L)		5.31	1.64		
	Orthophosphate-Dissolved (as P) (mg/L)		0.0017	0.0029		
	Phosphorus (P)-Total Dissolved (mg/L)		<0.0020	0.0038		
	Phosphorus (P)-Total (mg/L)		<0.0020	0.0170		
	Sulfate (SO4) (mg/L)		378 <sup>DLHC</sup>	96.8		
	Anion Sum (meq/L)		14.9	5.51		
	Cation Sum (meq/L)		13.8	4.96		
Cation - Anion Balance (%)		-3.8	-5.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50	<0.50		
	Total Organic Carbon (mg/L)		<0.50	<0.50		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD		
	Dissolved Metals Filtration Location		FIELD	FIELD		
	Aluminum (Al)-Dissolved (mg/L)		<0.0030	<0.0030		
	Antimony (Sb)-Dissolved (mg/L)		0.00010	0.00020		
	Arsenic (As)-Dissolved (mg/L)		<0.00010	<0.00010		
	Barium (Ba)-Dissolved (mg/L)		0.0642	0.101		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2379775-1	L2379775-2		
		Description	WG	WG		
		Sampled Date	07-NOV-19	07-NOV-19		
		Sampled Time	15:45	15:25		
		Client ID	EV_BRGW_WG_2 019_Q4_NP	EV_WH50GW_WG _2019_Q4_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.043	0.012			
	Cadmium (Cd)-Dissolved (ug/L)	0.0669	0.0294			
	Calcium (Ca)-Dissolved (mg/L)	177	60.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00012	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00044	0.00043			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.199			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0575	0.0122			
	Magnesium (Mg)-Dissolved (mg/L)	55.2	21.5			
	Manganese (Mn)-Dissolved (mg/L)	0.00337	0.0293			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000608	0.00124			
	Nickel (Ni)-Dissolved (mg/L)	0.00175	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.21	1.04			
	Selenium (Se)-Dissolved (ug/L)	30.7	10.8			
	Silicon (Si)-Dissolved (mg/L)	3.56	2.64			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	8.80	2.84			
	Strontium (Sr)-Dissolved (mg/L)	0.379	0.153			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00176	0.00112			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0046	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Magnesium (Mg)-Dissolved	B	L2379775-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2379775-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2379775-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2379775-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2379775-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2379775-1, -2
Matrix Spike	Nitrate (as N)	MS-B	L2379775-1, -2
Matrix Spike	Sulfate (SO4)	MS-B	L2379775-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

## Reference Information

**SOLIDS-TDS-CL**            Water            Total Dissolved Solids            APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**    Water            Ion Balance Calculation            APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                Water            Total Kjeldahl Nitrogen            APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                 Water            Total Suspended Solids            APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**            Water            Turbidity                            APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20191107Q4POT

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904014</b>							
<b>WG3215490-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.5		%		85-115	09-NOV-19
<b>WG3215490-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	09-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4904007</b>							
<b>WG3215492-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.6		%		85-115	09-NOV-19
<b>WG3215492-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	09-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4907567</b>							
<b>WG3218679-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.4		%		80-120	14-NOV-19
<b>WG3218679-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	14-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-10</b>	<b>LCS</b>							
Bromide (Br)			97.6		%		85-115	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	08-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905808</b>							
<b>WG3217464-3</b>	<b>DUP</b>	<b>L2379775-2</b>						
Dissolved Organic Carbon		<0.50	0.53	RPD-NA	mg/L	N/A	20	12-NOV-19
<b>WG3217464-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.3		%		80-120	12-NOV-19
<b>WG3217464-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-NOV-19
<b>WG3217464-4</b>	<b>MS</b>	<b>L2379775-2</b>						
Dissolved Organic Carbon			80.7		%		70-130	12-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905808</b>							
<b>WG3217464-3</b>	<b>DUP</b>	<b>L2379775-2</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	12-NOV-19
<b>WG3217464-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4905808							
<b>WG3217464-2</b>	<b>LCS</b>							
Total Organic Carbon			95.5		%		80-120	12-NOV-19
<b>WG3217464-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4903855							
<b>WG3215339-10</b>	<b>LCS</b>							
Chloride (Cl)			100.6		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	08-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4904007							
<b>WG3215492-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.5		%		90-110	09-NOV-19
<b>WG3215492-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	09-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4903855							
<b>WG3215339-10</b>	<b>LCS</b>							
Fluoride (F)			101.8		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	08-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4908847							
<b>WG3219184-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.7		%		80-120	15-NOV-19
<b>WG3219184-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4907567							
<b>WG3218679-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			105.6		%		80-120	14-NOV-19
Antimony (Sb)-Dissolved			101.8		%		80-120	14-NOV-19
Arsenic (As)-Dissolved			101.3		%		80-120	14-NOV-19
Barium (Ba)-Dissolved			101.8		%		80-120	14-NOV-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	14-NOV-19
Boron (B)-Dissolved			97.9		%		80-120	14-NOV-19



## Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4907567</b>							
<b>WG3218679-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			101.1		%		80-120	14-NOV-19
Calcium (Ca)-Dissolved			100.7		%		80-120	14-NOV-19
Chromium (Cr)-Dissolved			101.1		%		80-120	14-NOV-19
Cobalt (Co)-Dissolved			99.4		%		80-120	14-NOV-19
Copper (Cu)-Dissolved			99.8		%		80-120	14-NOV-19
Iron (Fe)-Dissolved			98.4		%		80-120	14-NOV-19
Lead (Pb)-Dissolved			100.9		%		80-120	14-NOV-19
Lithium (Li)-Dissolved			99.95		%		80-120	14-NOV-19
Magnesium (Mg)-Dissolved			96.5		%		80-120	14-NOV-19
Manganese (Mn)-Dissolved			97.1		%		80-120	14-NOV-19
Molybdenum (Mo)-Dissolved			107.2		%		80-120	14-NOV-19
Nickel (Ni)-Dissolved			101.8		%		80-120	14-NOV-19
Potassium (K)-Dissolved			100.4		%		80-120	14-NOV-19
Selenium (Se)-Dissolved			103.9		%		80-120	14-NOV-19
Silicon (Si)-Dissolved			104.2		%		60-140	14-NOV-19
Silver (Ag)-Dissolved			105.9		%		80-120	14-NOV-19
Sodium (Na)-Dissolved			100.6		%		80-120	14-NOV-19
Strontium (Sr)-Dissolved			107.6		%		80-120	14-NOV-19
Thallium (Tl)-Dissolved			98.4		%		80-120	14-NOV-19
Tin (Sn)-Dissolved			101.4		%		80-120	14-NOV-19
Titanium (Ti)-Dissolved			96.9		%		80-120	14-NOV-19
Uranium (U)-Dissolved			98.5		%		80-120	14-NOV-19
Vanadium (V)-Dissolved			102.7		%		80-120	14-NOV-19
Zinc (Zn)-Dissolved			104.3		%		80-120	14-NOV-19
<b>WG3218679-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	14-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	14-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	14-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	14-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	14-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19



## Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4907567</b>							
<b>WG3218679-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	14-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	14-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	14-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	14-NOV-19
Magnesium (Mg)-Dissolved			0.0054	B	mg/L		0.005	14-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	14-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	14-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	14-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	14-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	14-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	14-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	14-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	14-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	14-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	14-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	14-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	14-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	14-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	14-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909057</b>							
<b>WG3219029-22</b>	<b>LCS</b>							
Ammonia as N			91.8		%		85-115	14-NOV-19
<b>WG3219029-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	14-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903855</b>							
<b>WG3215339-10</b>	<b>LCS</b>							
Nitrite (as N)			97.5		%		90-110	08-NOV-19
<b>WG3215339-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	08-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							







## Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Water								
Batch R4903855								
WG3215339-9 MB								
Sulfate (SO4)								
			<0.30		mg/L		0.3	08-NOV-19
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R4909193								
WG3216923-8 LCS								
Total Dissolved Solids								
			98.2		%		85-115	13-NOV-19
WG3216923-7 MB								
Total Dissolved Solids								
			<10		mg/L		10	13-NOV-19
<b>TKN-L-F-CL</b>								
Water								
Batch R4903830								
WG3215247-46 LCS								
Total Kjeldahl Nitrogen								
			91.7		%		75-125	12-NOV-19
WG3215247-45 MB								
Total Kjeldahl Nitrogen								
			<0.050		mg/L		0.05	12-NOV-19
<b>TSS-L-CL</b>								
Water								
Batch R4907025								
WG3216835-6 LCS								
Total Suspended Solids								
			92.1		%		85-115	13-NOV-19
WG3216835-5 MB								
Total Suspended Solids								
			<1.0		mg/L		1	13-NOV-19
<b>TURBIDITY-CL</b>								
Water								
Batch R4903594								
WG3214636-15 DUP								
Turbidity								
		L2379775-2 14.6	14.5		NTU	0.7	15	08-NOV-19
WG3214636-14 LCS								
Turbidity								
			94.5		%		85-115	08-NOV-19
WG3214636-13 MB								
Turbidity								
			<0.10		NTU		0.1	08-NOV-19

# Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2379775

Report Date: 18-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	07-NOV-19 15:45	08-NOV-19 17:00	0.25	25	hours	EHTR-FM
	2	07-NOV-19 15:25	08-NOV-19 17:00	0.25	26	hours	EHTR-FM
pH	1	07-NOV-19 15:45	09-NOV-19 09:00	0.25	41	hours	EHTR-FM
	2	07-NOV-19 15:25	09-NOV-19 09:00	0.25	42	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2379775 were received on 08-NOV-19 08:30.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

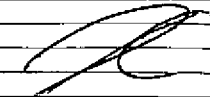
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191107Q4POT      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD	
Job Description	Q3 Ground Water Sampling			Lab Contact	Lyudmyla Shvets		Email 1:	kimberley.hackett@teck.com		X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com		Email 2:	cameron.griffin@teck.com		X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE		Email 3:	bryan.ogden@teck.com		X	X	X
Address	RR#1 HWY# 3						Email 4:	Teck Lab Results@report.teck.com		X	X	X
							Email 5:	teckcoal@equisonline.com		X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800		PO number	VPO00610852				

SAMPLE DETAILS							
 L2379775-COFC							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.
EV_BRGW_WG_2019_Q4_NP	EV_BRGW	WG		11/7/2019	15:45	G	5
EV_WH50GW_WG_2019_Q4_NP	EV_BRGW	WG		11/7/2019	15:25	G	5
Total							10

ANALYSIS REQUESTED										
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	Nitric	Sulphuric	Sulphuric					Sodium Disulphate	HCl	
TECKCOAL-ROUTINE-VA (E305.1)										
TECKCOAL-MET-D-VA (SW6020)										
DOC (APHA 5310)										
Dissolved Phosphorus										
TKN/TOC (APHA 4500-NORG)										
Total Nitrogen for BC (NO2 and NO3)										
T-ULTRA MERCURY (SW6020)										
D-ULTRA MERCURY (SW6020)										
EPH (C10-C32)										
D-Mercury										
T-Mercury										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	November 7, 2019		11/08 8:30

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Kimberley Hackett	Mobile #	
Sampler's Signature		Date/Time	November 7, 2019

4c



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 13-NOV-19  
Report Date: 19-NOV-19 17:46 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2381759  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191112Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2381759-1 WG 12-NOV-19 13:15 EV_MW_MC3_WG _2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	585			
	Hardness (as CaCO3) (mg/L)	119			
	pH (pH)	8.27			
	ORP (mV)	319			
	Total Suspended Solids (mg/L)	3.7			
	Total Dissolved Solids (mg/L)	389	DLHC		
	Turbidity (NTU)	4.10			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	317			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	317			
	Ammonia as N (mg/L)	0.0157			
	Bromide (Br) (mg/L)	0.093			
	Chloride (Cl) (mg/L)	6.11			
	Fluoride (F) (mg/L)	1.61			
	Ion Balance (%)	95.1			
	Nitrate (as N) (mg/L)	0.342			
	Nitrite (as N) (mg/L)	0.0769			
	Total Kjeldahl Nitrogen (mg/L)	0.151			
	Total Nitrogen (mg/L)	0.569			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0081			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0091			
	Phosphorus (P)-Total (mg/L)	0.0182			
	Sulfate (SO4) (mg/L)	41.4			
	Anion Sum (meq/L)	7.49			
	Cation Sum (meq/L)	7.12			
	Cation - Anion Balance (%)	-2.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.78			
	Total Organic Carbon (mg/L)	0.83			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0031			
	Antimony (Sb)-Dissolved (mg/L)	0.00012			
	Arsenic (As)-Dissolved (mg/L)	0.00075			
	Barium (Ba)-Dissolved (mg/L)	0.117			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2381759-1 WG 12-NOV-19 13:15 EV_MW_MC3_WG _2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.069			
	Cadmium (Cd)-Dissolved (ug/L)	<0.030 <sup>DLM</sup>			
	Calcium (Ca)-Dissolved (mg/L)	30.2			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00024			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0752			
	Magnesium (Mg)-Dissolved (mg/L)	10.5			
	Manganese (Mn)-Dissolved (mg/L)	0.0254			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.0328			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.920			
	Selenium (Se)-Dissolved (ug/L)	4.11			
	Silicon (Si)-Dissolved (mg/L)	2.85			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	108			
	Strontium (Sr)-Dissolved (mg/L)	0.143			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00014			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00108			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0011			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			



## Reference Information

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = [\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

---

20191112Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4909572							
<b>WG3219589-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.1		%		85-115	14-NOV-19
<b>WG3219589-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4906891							
<b>WG3218717-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.5		%		85-115	14-NOV-19
<b>WG3218717-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4916086							
<b>WG3220713-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4906766							
<b>WG3218723-10</b>	<b>LCS</b>							
Bromide (Br)			98.3		%		85-115	13-NOV-19
<b>WG3218723-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	13-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4912047							
<b>WG3220406-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			115.5		%		80-120	15-NOV-19
<b>WG3220406-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4912047							
<b>WG3220406-2</b>	<b>LCS</b>							
Total Organic Carbon			105.1		%		80-120	15-NOV-19
<b>WG3220406-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4906766							
<b>WG3218723-10</b>	<b>LCS</b>							
Chloride (Cl)			100.2		%		90-110	13-NOV-19
<b>WG3218723-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	13-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4906891							
<b>WG3218717-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.4		%		90-110	14-NOV-19
<b>WG3218717-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4906766							
<b>WG3218723-10</b>	<b>LCS</b>							
Fluoride (F)			104.9		%		90-110	13-NOV-19
<b>WG3218723-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	13-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4915679							
<b>WG3221215-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.9		%		80-120	19-NOV-19
<b>WG3221215-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4916086							
<b>WG3220713-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.4		%		80-120	17-NOV-19
Antimony (Sb)-Dissolved			99.97		%		80-120	17-NOV-19
Arsenic (As)-Dissolved			94.7		%		80-120	17-NOV-19
Barium (Ba)-Dissolved			88.4		%		80-120	17-NOV-19
Bismuth (Bi)-Dissolved			98.9		%		80-120	17-NOV-19
Boron (B)-Dissolved			97.7		%		80-120	17-NOV-19
Cadmium (Cd)-Dissolved			93.0		%		80-120	17-NOV-19
Calcium (Ca)-Dissolved			95.4		%		80-120	17-NOV-19
Chromium (Cr)-Dissolved			92.1		%		80-120	17-NOV-19
Cobalt (Co)-Dissolved			93.9		%		80-120	17-NOV-19
Copper (Cu)-Dissolved			92.3		%		80-120	17-NOV-19



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			92.6		%		80-120	17-NOV-19
Lead (Pb)-Dissolved			98.0		%		80-120	17-NOV-19
Lithium (Li)-Dissolved			94.7		%		80-120	17-NOV-19
Magnesium (Mg)-Dissolved			93.4		%		80-120	17-NOV-19
Manganese (Mn)-Dissolved			90.1		%		80-120	17-NOV-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	17-NOV-19
Nickel (Ni)-Dissolved			92.1		%		80-120	17-NOV-19
Potassium (K)-Dissolved			96.3		%		80-120	17-NOV-19
Selenium (Se)-Dissolved			98.4		%		80-120	17-NOV-19
Silicon (Si)-Dissolved			103.1		%		60-140	17-NOV-19
Silver (Ag)-Dissolved			99.2		%		80-120	17-NOV-19
Sodium (Na)-Dissolved			97.6		%		80-120	17-NOV-19
Strontium (Sr)-Dissolved			102.7		%		80-120	17-NOV-19
Thallium (Tl)-Dissolved			103.5		%		80-120	17-NOV-19
Tin (Sn)-Dissolved			93.4		%		80-120	17-NOV-19
Titanium (Ti)-Dissolved			96.3		%		80-120	17-NOV-19
Uranium (U)-Dissolved			99.8		%		80-120	17-NOV-19
Vanadium (V)-Dissolved			95.4		%		80-120	17-NOV-19
Zinc (Zn)-Dissolved			87.6		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4912029</b>							
<b>WG3219851-10</b>	<b>LCS</b>							
Ammonia as N			97.9		%		85-115	16-NOV-19
<b>WG3219851-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906766</b>							
<b>WG3218723-10</b>	<b>LCS</b>							
Nitrite (as N)			101.1		%		90-110	13-NOV-19
<b>WG3218723-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	13-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906766</b>							
<b>WG3218723-10</b>	<b>LCS</b>							
Nitrate (as N)			100.5		%		90-110	13-NOV-19
<b>WG3218723-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	13-NOV-19
<b>ORP-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4908169							
WG3219158-1	CRM	CL-ORP						
ORP			221		mV		210-230	14-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4910187							
WG3219686-2	LCS							
Phosphorus (P)-Total			98.7		%		80-120	15-NOV-19
WG3219686-1	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4910187							
WG3219686-2	LCS							
Phosphorus (P)-Total Dissolved			98.7		%		80-120	15-NOV-19
WG3219686-1	MB							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	15-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4906891							
WG3218717-14	LCS							
pH			7.02		pH		6.9-7.1	14-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4906114							
WG3217903-10	LCS							
Orthophosphate-Dissolved (as P)			102.4		%		80-120	13-NOV-19
WG3217903-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	13-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4906766							
WG3218723-10	LCS							
Sulfate (SO4)			100.2		%		90-110	13-NOV-19
WG3218723-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	13-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4912409							
WG3219728-5	LCS							
Total Dissolved Solids			99.0		%		85-115	15-NOV-19
WG3219728-4	MB							



## Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4912409							
WG3219728-4	MB							
Total Dissolved Solids			<10		mg/L		10	15-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4909749							
WG3219638-6	LCS							
Total Kjeldahl Nitrogen			93.8		%		75-125	15-NOV-19
WG3219638-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4916100							
WG3221140-6	LCS							
Total Suspended Solids			98.2		%		85-115	18-NOV-19
WG3221140-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4906139							
WG3218070-8	LCS							
Turbidity			95.5		%		85-115	13-NOV-19
WG3218070-7	MB							
Turbidity			<0.10		NTU		0.1	13-NOV-19



# Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2381759

Report Date: 19-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	12-NOV-19 13:15	14-NOV-19 14:00	0.25	49	hours	EHTR-FM
pH	1	12-NOV-19 13:15	14-NOV-19 12:00	0.25	47	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2381759 were received on 13-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>20191112Q4GW</b>			TURNAROUND TIME:			RSUH:								
<b>PROJECT/CLIENT INFO</b>						<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job#	Elkview Operations					Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling					Lab Contact	Lyudmyla Shvets			Email 1	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin					Email	lyudmyla.shvets@alsglobal.com			Email 2	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com					Address	2559 29 Street NE			Email 3	bryan.ogden@teck.com	X	X	X
Address	RR#1 HWY# 3									Email 4	Teck Lab Results@sharepoint.teck.com	X	X	X
										Email 5	teckcoal@equisonline.com			X
City	Sparwood	Province	BC			City	Calgary	Province	AB					
Postal Code		Country	Canada			Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289					Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.											
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (ALPHA 5310)	Dissolved Phosphorus	TKN/TOC (ALPHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury
EV_MW_MC3_WG_2019_Q4_NP	EV_MW_MC3	WG	N	11/12/2019	13:15	G	5											
<b>Total</b>																		5

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	November 12, 2019	<i>OK</i>	11/13 0900

SERVICE REQUEST (rush - subject to availability)			
Regular (default) <b>X</b>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	Kimberley Hackett	Mobile #	
Sampler's Signature	<i>[Signature]</i>	Date/Time	November 12, 2019

5°C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 14-NOV-19  
Report Date: 21-NOV-19 11:39 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2382072  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191113Q4GW  
Legal Site Desc:

Comments: ADDITIONAL 21-NOV-19 11:30  
21-NOV-2019 Total Nitrogen results added.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2382072-1 WG 13-NOV-19 14:25 EV_MW_MC2A_W G_2019_Q4_NP	L2382072-2 WG 13-NOV-19 14:35 EV_MW_MC2B_W G_2019_Q4_NP	L2382072-3 WG 13-NOV-19 12:50 EV_MW_BC1A_W G_2019_Q4_NP	L2382072-4 WG 13-NOV-19 12:50 EV_MW_BC1B_W G_2019_Q4_NP	L2382072-5 WG 13-NOV-19 11:25 EV_MW_GT1A_W G_2019_Q4_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	750	1020	1560	1830	497
	Hardness (as CaCO3) (mg/L)	374	695	1270	1410	292
	pH (pH)	8.20	8.20	8.09	8.20	8.34
	ORP (mV)	156	469	373	368	159
	Total Suspended Solids (mg/L)	1.1	<1.0	218	4.1	1.8
	Total Dissolved Solids (mg/L)	469 <sup>DLHC</sup>	888 <sup>DLHC</sup>	1700 <sup>DLHC</sup>	1900 <sup>DLHC</sup>	347 <sup>DLHC</sup>
	Turbidity (NTU)	13.8	0.10	183	2.27	2.23
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	20.7	15.0	18.0	16.5	3.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	394	240	260	244	185
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	3.4
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	394	240	260	244	188
	Ammonia as N (mg/L)	0.995	<0.0050	0.0124	0.0050	0.0903
	Bromide (Br) (mg/L)	<0.050	0.89 <sup>DLHC</sup>	1.85 <sup>DLHC</sup>	1.41 <sup>DLHC</sup>	0.084
	Chloride (Cl) (mg/L)	62.2	28.3 <sup>DLHC</sup>	33.5 <sup>DLHC</sup>	40.1 <sup>DLHC</sup>	2.70
	Fluoride (F) (mg/L)	0.248	0.12 <sup>DLHC</sup>	0.21 <sup>DLHC</sup>	0.29 <sup>DLHC</sup>	0.114
	Ion Balance (%)	101	97.4 <sup>DLHC</sup>	100 <sup>DLHC</sup>	98.1 <sup>DLHC</sup>	95.0
	Nitrate (as N) (mg/L)	<0.0050	7.80 <sup>DLHC</sup>	18.9 <sup>DLHC</sup>	24.5 <sup>DLHC</sup>	<0.0050
	Nitrite (as N) (mg/L)	0.0014	<0.0050 <sup>TKNI</sup>	<0.0050 <sup>TKNI</sup>	<0.0050 <sup>TKNI</sup>	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.904	<0.050	0.620	<0.050	0.087
	Total Nitrogen (mg/L)	0.905	7.80	19.5	24.5	0.087
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010	0.0035	0.0017	0.0252	0.0015
	Phosphorus (P)-Total Dissolved (mg/L)	<0.0020	0.0031	0.0331	0.024 <sup>DLM</sup>	0.0067
	Phosphorus (P)-Total (mg/L)	0.0036	0.0060 <sup>DLM</sup>	0.425 <sup>DLHC</sup>	0.031 <sup>DLM</sup>	0.0075
	Sulfate (SO4) (mg/L)	<0.30	417 <sup>DLHC</sup>	898 <sup>DLHC</sup>	1040 <sup>DLHC</sup>	119
	Anion Sum (meq/L)	9.63	14.8	26.2	29.5	6.31
	Cation Sum (meq/L)	9.74	14.4	26.2	29.0	6.00
Cation - Anion Balance (%)	0.6	-1.3	0.0	-0.9	-2.5	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50	<0.50	0.77	<0.50	0.71
	Total Organic Carbon (mg/L)	<0.50	<0.50	<2.5 <sup>DLM</sup>	<0.50	0.67
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	0.143	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	0.00100	0.00152	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00097	0.00010	0.00055	0.00024	0.00087
	Barium (Ba)-Dissolved (mg/L)	5.01	0.0531	0.0570	0.0407	0.0591

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2382072-6 WG 13-NOV-19 11:35 EV_MW_GT1B_W G_2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	1630			
	Hardness (as CaCO3) (mg/L)	1220			
	pH (pH)	8.25			
	ORP (mV)	431			
	Total Suspended Solids (mg/L)	3.2			
	Total Dissolved Solids (mg/L)	1760	DLHC		
	Turbidity (NTU)	1.75			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	246			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	246			
	Ammonia as N (mg/L)	0.0248			
	Bromide (Br) (mg/L)	1.05	DLHC		
	Chloride (Cl) (mg/L)	45.0	DLHC		
	Fluoride (F) (mg/L)	0.20	DLHC		
	Ion Balance (%)	93.2			
	Nitrate (as N) (mg/L)	16.9	DLHC		
	Nitrite (as N) (mg/L)	<0.0050	DLHC		
	Total Kjeldahl Nitrogen (mg/L)	<0.050	TKNI		
	Total Nitrogen (mg/L)	16.9			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0089			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0087			
	Phosphorus (P)-Total (mg/L)	0.0111			
	Sulfate (SO4) (mg/L)	954	DLHC		
	Anion Sum (meq/L)	27.3			
	Cation Sum (meq/L)	25.4			
	Cation - Anion Balance (%)	-3.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.79			
	Total Organic Carbon (mg/L)	0.73			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00130			
	Arsenic (As)-Dissolved (mg/L)	0.00016			
	Barium (Ba)-Dissolved (mg/L)	0.0577			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2382072-1 WG 13-NOV-19 14:25 EV_MW_MC2A_W G_2019_Q4_NP	L2382072-2 WG 13-NOV-19 14:35 EV_MW_MC2B_W G_2019_Q4_NP	L2382072-3 WG 13-NOV-19 12:50 EV_MW_BC1A_W G_2019_Q4_NP	L2382072-4 WG 13-NOV-19 12:50 EV_MW_BC1B_W G_2019_Q4_NP	L2382072-5 WG 13-NOV-19 11:25 EV_MW_GT1A_W G_2019_Q4_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.076	0.027	0.058	0.013
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.105	0.225	<0.0050
	Calcium (Ca)-Dissolved (mg/L)	95.4	163	249	77.4
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00015	0.00028	0.00011
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10	3.46	0.25
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00026	0.00086	0.00099
	Iron (Fe)-Dissolved (mg/L)	1.13	<0.010	0.567	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	0.000395	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.261	0.0558	0.179	0.202
	Magnesium (Mg)-Dissolved (mg/L)	33.0	69.6	158	187
	Manganese (Mn)-Dissolved (mg/L)	0.0528	<0.00010	0.0984	0.00087
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000098	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000279	0.000560	0.00528	0.0104
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00071	0.0116	0.00388
	Potassium (K)-Dissolved (mg/L)	3.83	2.13	6.63	6.97
	Selenium (Se)-Dissolved (ug/L)	<0.050	62.0	158	219
	Silicon (Si)-Dissolved (mg/L)	4.18	3.61	4.02	2.79
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	48.5	11.9	12.9	15.4
	Strontium (Sr)-Dissolved (mg/L)	1.50	0.349	0.957	0.959
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000012	0.000037
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00017
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000054	0.00145	0.00717	0.0125
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00136	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0039	0.0013	0.0166	0.0070

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2382072-6 WG 13-NOV-19 11:35 EV_MW_GT1B_W G_2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.032			
	Cadmium (Cd)-Dissolved (ug/L)	0.173			
	Calcium (Ca)-Dissolved (mg/L)	225			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.24			
	Copper (Cu)-Dissolved (mg/L)	0.00043			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.171			
	Magnesium (Mg)-Dissolved (mg/L)	161			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00730			
	Nickel (Ni)-Dissolved (mg/L)	0.0204			
	Potassium (K)-Dissolved (mg/L)	5.62			
	Selenium (Se)-Dissolved (ug/L)	122			
	Silicon (Si)-Dissolved (mg/L)	2.32			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	18.9			
	Strontium (Sr)-Dissolved (mg/L)	0.819			
	Thallium (Tl)-Dissolved (mg/L)	0.000018			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.0125			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0059			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2382072-6
Matrix Spike	Boron (B)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2382072-6
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2382072-6
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2382072-6
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2382072-6
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2382072-1, -2, -3, -4, -5
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2382072-6
Matrix Spike	Sulfate (SO4)	MS-B	L2382072-1, -2, -3, -4, -5, -6

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon			

## Reference Information

and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

## Reference Information

<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

20191113Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 1 of 11

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909572</b>							
<b>WG3219589-9</b>	<b>DUP</b>	<b>L2382072-5</b>						
Acidity (as CaCO3)		3.7	3.9		mg/L	4.7	20	14-NOV-19
<b>WG3219589-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	14-NOV-19
<b>WG3219589-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.3		%		85-115	14-NOV-19
<b>WG3219589-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>WG3219589-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906891</b>							
<b>WG3218717-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	14-NOV-19
<b>WG3218717-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4914448</b>							
<b>WG3220818-10</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.3		%		80-120	17-NOV-19
<b>WG3220818-9</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-NOV-19
<b>Batch</b>	<b>R4915189</b>							
<b>WG3220837-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.6		%		80-120	18-NOV-19
<b>WG3220837-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-2</b>	<b>LCS</b>							
Bromide (Br)			96.9		%		85-115	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4909086							
WG3219595-6	LCS							
Dissolved Organic Carbon			92.8		%		80-120	14-NOV-19
WG3219595-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
Batch	R4909166							
WG3219635-2	LCS							
Dissolved Organic Carbon			115.5		%		80-120	14-NOV-19
WG3219635-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4909086							
WG3219595-6	LCS							
Total Organic Carbon			104.6		%		80-120	14-NOV-19
WG3219595-5	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
Batch	R4909166							
WG3219635-2	LCS							
Total Organic Carbon			105.1		%		80-120	14-NOV-19
WG3219635-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4909613							
WG3219798-2	LCS							
Chloride (Cl)			101.6		%		90-110	14-NOV-19
WG3219798-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	14-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4906891							
WG3218717-5	LCS							
Conductivity (@ 25C)			94.2		%		90-110	14-NOV-19
WG3218717-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	14-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4909613							
WG3219798-2	LCS							
Fluoride (F)			105.3		%		90-110	14-NOV-19
WG3219798-1	MB							



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4909613</b>								
<b>WG3219798-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	14-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch R4915212</b>								
<b>WG3220537-6 LCS</b>								
Mercury (Hg)-Dissolved			96.4		%		80-120	18-NOV-19
<b>WG3220537-5 MB</b>								
Mercury (Hg)-Dissolved		<b>NP</b>	<0.000005C		mg/L		0.000005	18-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch R4914448</b>								
<b>WG3220818-10 LCS</b>								
Aluminum (Al)-Dissolved			99.7		%		80-120	17-NOV-19
Antimony (Sb)-Dissolved			96.9		%		80-120	17-NOV-19
Arsenic (As)-Dissolved			100.3		%		80-120	17-NOV-19
Barium (Ba)-Dissolved			95.4		%		80-120	17-NOV-19
Bismuth (Bi)-Dissolved			101.4		%		80-120	17-NOV-19
Boron (B)-Dissolved			99.2		%		80-120	17-NOV-19
Cadmium (Cd)-Dissolved			95.0		%		80-120	17-NOV-19
Calcium (Ca)-Dissolved			98.0		%		80-120	17-NOV-19
Chromium (Cr)-Dissolved			102.5		%		80-120	17-NOV-19
Cobalt (Co)-Dissolved			100.1		%		80-120	17-NOV-19
Copper (Cu)-Dissolved			97.7		%		80-120	17-NOV-19
Iron (Fe)-Dissolved			100.1		%		80-120	17-NOV-19
Lead (Pb)-Dissolved			97.6		%		80-120	17-NOV-19
Lithium (Li)-Dissolved			93.5		%		80-120	17-NOV-19
Magnesium (Mg)-Dissolved			97.7		%		80-120	17-NOV-19
Manganese (Mn)-Dissolved			99.4		%		80-120	17-NOV-19
Molybdenum (Mo)-Dissolved			96.8		%		80-120	17-NOV-19
Nickel (Ni)-Dissolved			97.9		%		80-120	17-NOV-19
Potassium (K)-Dissolved			98.1		%		80-120	17-NOV-19
Selenium (Se)-Dissolved			101.8		%		80-120	17-NOV-19
Silicon (Si)-Dissolved			102.3		%		60-140	17-NOV-19
Silver (Ag)-Dissolved			92.3		%		80-120	17-NOV-19
Sodium (Na)-Dissolved			105.2		%		80-120	17-NOV-19
Strontium (Sr)-Dissolved			98.2		%		80-120	17-NOV-19



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4914448</b>							
<b>WG3220818-10 LCS</b>								
Thallium (Tl)-Dissolved			94.0		%		80-120	17-NOV-19
Tin (Sn)-Dissolved			93.3		%		80-120	17-NOV-19
Titanium (Ti)-Dissolved			93.7		%		80-120	17-NOV-19
Uranium (U)-Dissolved			95.8		%		80-120	17-NOV-19
Vanadium (V)-Dissolved			99.6		%		80-120	17-NOV-19
Zinc (Zn)-Dissolved			97.0		%		80-120	17-NOV-19
<b>WG3220818-9 MB</b>		<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	17-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-NOV-19



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4914448</b>							
<b>WG3220818-9</b>	<b>MB</b>	<b>NP</b>						
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
<b>Batch</b>	<b>R4915189</b>							
<b>WG3220837-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			101.7		%		80-120	18-NOV-19
Antimony (Sb)-Dissolved			98.1		%		80-120	18-NOV-19
Arsenic (As)-Dissolved			99.98		%		80-120	18-NOV-19
Barium (Ba)-Dissolved			95.8		%		80-120	18-NOV-19
Bismuth (Bi)-Dissolved			101.1		%		80-120	18-NOV-19
Boron (B)-Dissolved			97.5		%		80-120	18-NOV-19
Cadmium (Cd)-Dissolved			99.8		%		80-120	18-NOV-19
Calcium (Ca)-Dissolved			98.0		%		80-120	18-NOV-19
Chromium (Cr)-Dissolved			101.5		%		80-120	18-NOV-19
Cobalt (Co)-Dissolved			100.5		%		80-120	18-NOV-19
Copper (Cu)-Dissolved			97.8		%		80-120	18-NOV-19
Iron (Fe)-Dissolved			93.8		%		80-120	18-NOV-19
Lead (Pb)-Dissolved			103.7		%		80-120	18-NOV-19
Lithium (Li)-Dissolved			100.4		%		80-120	18-NOV-19
Magnesium (Mg)-Dissolved			100.8		%		80-120	18-NOV-19
Manganese (Mn)-Dissolved			104.1		%		80-120	18-NOV-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	18-NOV-19
Nickel (Ni)-Dissolved			99.9		%		80-120	18-NOV-19
Potassium (K)-Dissolved			101.1		%		80-120	18-NOV-19
Selenium (Se)-Dissolved			96.0		%		80-120	18-NOV-19
Silicon (Si)-Dissolved			107.7		%		60-140	18-NOV-19
Silver (Ag)-Dissolved			101.9		%		80-120	18-NOV-19
Sodium (Na)-Dissolved			108.5		%		80-120	18-NOV-19
Strontium (Sr)-Dissolved			99.0		%		80-120	18-NOV-19
Thallium (Tl)-Dissolved			100.2		%		80-120	18-NOV-19
Tin (Sn)-Dissolved			98.4		%		80-120	18-NOV-19
Titanium (Ti)-Dissolved			98.9		%		80-120	18-NOV-19
Uranium (U)-Dissolved			104.3		%		80-120	18-NOV-19
Vanadium (V)-Dissolved			103.2		%		80-120	18-NOV-19





## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3220837-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			98.9		%		80-120	18-NOV-19
<b>WG3220837-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
<b>NH3-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4912029							
WG3219851-14	LCS							
Ammonia as N			101.0		%		85-115	16-NOV-19
WG3219851-13	MB							
Ammonia as N			<0.0050		mg/L		0.005	16-NOV-19
Batch	R4917048							
WG3222545-2	LCS							
Ammonia as N			107.5		%		85-115	19-NOV-19
WG3222545-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4909613							
WG3219798-2	LCS							
Nitrite (as N)			98.1		%		90-110	14-NOV-19
WG3219798-1	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	14-NOV-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4909613							
WG3219798-2	LCS							
Nitrate (as N)			103.0		%		90-110	14-NOV-19
WG3219798-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	14-NOV-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4908169							
WG3219158-1	CRM	CL-ORP						
ORP			221		mV		210-230	14-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4910187							
WG3219686-6	LCS							
Phosphorus (P)-Total			98.2		%		80-120	15-NOV-19
WG3219686-5	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-NOV-19
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
Batch	R4910187							
WG3219686-6	LCS							
Phosphorus (P)-Total Dissolved			98.2		%		80-120	15-NOV-19
WG3219686-5	MB							





## Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4916100							
WG3221140-5	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4908127							
WG3219135-3	DUP	L2382072-3						
Turbidity		183	191		NTU	4.3	15	14-NOV-19
WG3219135-2	LCS							
Turbidity			94.5		%		85-115	14-NOV-19
WG3219135-1	MB							
Turbidity			<0.10		NTU		0.1	14-NOV-19

# Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2382072

Report Date: 21-NOV-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	13-NOV-19 14:25	14-NOV-19 14:00	0.25	24	hours	EHTR-FM
	2	13-NOV-19 14:35	14-NOV-19 14:00	0.25	24	hours	EHTR-FM
	3	13-NOV-19 12:50	14-NOV-19 14:00	0.25	25	hours	EHTR-FM
	4	13-NOV-19 12:50	14-NOV-19 14:00	0.25	25	hours	EHTR-FM
	5	13-NOV-19 11:25	14-NOV-19 14:00	0.25	27	hours	EHTR-FM
	6	13-NOV-19 11:35	14-NOV-19 14:00	0.25	26	hours	EHTR-FM
pH							
	1	13-NOV-19 14:25	14-NOV-19 20:00	0.25	30	hours	EHTR-FM
	2	13-NOV-19 14:35	14-NOV-19 20:00	0.25	30	hours	EHTR-FM
	3	13-NOV-19 12:50	14-NOV-19 20:00	0.25	31	hours	EHTR-FM
	4	13-NOV-19 12:50	15-NOV-19 11:00	0.25	46	hours	EHTR-FM
	5	13-NOV-19 11:25	15-NOV-19 11:00	0.25	48	hours	EHTR-FM
	6	13-NOV-19 11:35	15-NOV-19 11:00	0.25	48	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2382072 were received on 14-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 2019113Q4GW TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@theport.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	YPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305 I)	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_MW_MC2A_WG_2019_Q4_NP	EV_MW_MC2A	WG	N	11/13/2019	14:25	G	5	1	1	1		1					1		
EV_MW_MC2B_WG_2019_Q4_NP	EV_MW_MC2B	WG	N	11/13/2019	14:35	G	5	1	1	1		1					1		
EV_MW_BC1A_WG_2019_Q4_NP	EV_MW_BC1A	WG	N	11/13/2019	12:50	G	5	1	1	1		1					1		
EV_MW_BC1B_WG_2019_Q4_NP	EV_MW_BC1B	WG	N	11/13/2019	12:50	G	5	1	1	1		1					1		
EV_MW_GT1A_WG_2019_Q4_NP	EV_MW_GT1A	WG	N	11/13/2019	11:25	G	5	1	1	1		1					1		
EV_MW_GT1B_WG_2019_Q4_NP	EV_MW_GT1B	WG	N	11/13/2019	11:35	G	5	1	1	1		1					1		
							Total	30											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Kimberley Hackett	November 13, 2019	DK	11/14 09:00

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Sampler's Signature	Mobile #	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Kimberley Hackett	<i>Kimberley Hackett</i>		November 13, 2019

4<sup>o</sup>



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 15-NOV-19  
Report Date: 25-NOV-19 18:15 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2382485  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191114Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2382485-1 WG 14-NOV-19 08:55 EV_MW_MC1A_W G_2019_Q4_NP	L2382485-2 WG 14-NOV-19 09:00 EV_MW_MC1B_W G_2019_Q4_NP	L2382485-3 WG 14-NOV-19 14:05 EV_MW_MC4_WG _2019_Q4_NP	L2382485-4 WG 14-NOV-19 11:55 EV_MW_SPR1A_ WG_2019_Q4_NP	L2382485-5 WG 14-NOV-19 11:10 EV_MW_SPR1B_ WG_2019_Q4_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	828	1010	768	556	405
	Hardness (as CaCO3) (mg/L)	410	569	464	333	147
	pH (pH)	7.74	7.68	7.77	7.88	8.11
	ORP (mV)	127	462	132	372	463
	Total Suspended Solids (mg/L)	3.5	27.3	1.9	4.8	121
	Total Dissolved Solids (mg/L)	486 <sup>DLHC</sup>	689 <sup>DLHC</sup>	532 <sup>DLHC</sup>	320 <sup>DLHC</sup>	274 <sup>DLHC</sup>
	Turbidity (NTU)	9.10	155	3.41	3.99	148
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	24.3	33.6	23.8	14.8	2.9
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	368	407	351	311	212
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	368 <sup>DLHC</sup>	407	351	311	212
	Ammonia as N (mg/L)	1.86 <sup>DLHC</sup>	0.402 <sup>DLHC</sup>	0.0131	0.0879	0.208
	Bromide (Br) (mg/L)	0.623	1.26 <sup>DLHC</sup>	0.179	<0.050	<0.050
	Chloride (Cl) (mg/L)	91.1	120 <sup>DLHC</sup>	31.7	14.6	1.55
	Fluoride (F) (mg/L)	0.378	0.31 <sup>DLHC</sup>	0.217	0.260	1.29
	Ion Balance (%)	93.5	93.7 <sup>DLHC</sup>	94.1	96.7	89.0
	Nitrate (as N) (mg/L)	<0.0050	0.531 <sup>DLHC</sup>	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	1.65	0.398	<0.050	0.088	0.460
	Total Nitrogen (mg/L)	1.65 <sup>HTD</sup>	0.929	<0.050	0.088	0.460
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021	<0.0010	<0.0010	0.0012	0.0018
	Phosphorus (P)-Total Dissolved (mg/L)	0.0052	0.0194	0.0024	0.0041	0.0026
	Phosphorus (P)-Total (mg/L)	0.0072	0.0237 <sup>DLHC</sup>	0.0035	0.0041	0.188 <sup>DLHC</sup>
	Sulfate (SO4) (mg/L)	0.46	124 <sup>DLHC</sup>	115	25.5	71.1
	Anion Sum (meq/L)	9.96	14.2	10.3	7.18	5.83
	Cation Sum (meq/L)	9.31	13.3	9.71	6.94	5.19
	Cation - Anion Balance (%)	-3.4	-3.3	-3.0	-1.7	-5.8
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.23	1.73	1.15	<0.50	1.53
	Total Organic Carbon (mg/L)	1.27	1.78	1.14	<0.50	3.63
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00017	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00149	0.00528	0.00045	0.00094	0.00052
	Barium (Ba)-Dissolved (mg/L)	10.6	1.02	0.108	0.403	0.0399

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2382485-6 WG 14-NOV-19 10:45 EV_MW_SPR1C_ WG_2019_Q4_NP	L2382485-7 WG 14-NOV-19 10:50 EV_MW_BC10A_ WG_2019_Q4_NP	L2382485-8 WG 14-NOV-19 10:55 EV_MW_BC10B_ WG_2019_Q4_NP	L2382485-9 WG 14-NOV-19 11:00 EV_MW_BC10C_ WG_2019_Q4_NP
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	585	587	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	341	344	<0.50	<0.50
	pH (pH)	7.88	7.91	5.55	5.37
	ORP (mV)	231	269	509	344
	Total Suspended Solids (mg/L)	1.4	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	394 <sup>DLHC</sup>	380 <sup>DLHC</sup>	<10	<10
	Turbidity (NTU)	<0.10	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.2	9.9	1.5	1.7
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	230	236	<1.0	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	230	236	<1.0	<1.0
	Ammonia as N (mg/L)	<0.0050	0.0132 <sup>RRV</sup>	<0.0050	<0.0050
	Bromide (Br) (mg/L)	0.271	0.266	<0.050	<0.050
	Chloride (Cl) (mg/L)	21.9	21.9	<0.50	<0.50
	Fluoride (F) (mg/L)	0.172	0.180	<0.020	<0.020
	Ion Balance (%)	95.4	95.0	0.0	0.0
	Nitrate (as N) (mg/L)	0.876	0.876	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.167	0.278	<0.050	<0.050
	Total Nitrogen (mg/L)	1.04	1.15	<0.050	<0.050
	Orthophosphate-Dissolved (as P) (mg/L)	0.0040 <sup>RRV</sup>	0.0041 <sup>RRV</sup>	<0.0010	<0.0010
	Phosphorus (P)-Total Dissolved (mg/L)	0.0034 <sup>RRV</sup>	0.0031 <sup>RRV</sup>	<0.0020	<0.0020
	Phosphorus (P)-Total (mg/L)	0.0026 <sup>RRV</sup>	0.0031 <sup>RRV</sup>	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	102	102	<0.30	<0.30
	Anion Sum (meq/L)	7.42	7.53	<0.10	<0.10
	Cation Sum (meq/L)	7.08	7.15	<0.10	<0.10
Cation - Anion Balance (%)	-2.3	-2.6	0.0	0.0	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.72	<0.50	<0.50	<0.50
	Total Organic Carbon (mg/L)	0.74	<0.50	<0.50	<0.50
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	LAB
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	LAB
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	0.00011	0.00012	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.144	0.145	0.00016 <sup>RRV</sup>	<0.00010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2382485-1 WG 14-NOV-19 08:55 EV_MW_MC1A_W G_2019_Q4_NP	L2382485-2 WG 14-NOV-19 09:00 EV_MW_MC1B_W G_2019_Q4_NP	L2382485-3 WG 14-NOV-19 14:05 EV_MW_MC4_WG _2019_Q4_NP	L2382485-4 WG 14-NOV-19 11:55 EV_MW_SPR1A_ WG_2019_Q4_NP	L2382485-5 WG 14-NOV-19 11:10 EV_MW_SPR1B_ WG_2019_Q4_NP	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.074	0.059	0.038	0.024	0.144
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050	0.0062	<0.0050	<0.0050	<0.020 <sup>DLM</sup>
	Calcium (Ca)-Dissolved (mg/L)	106	150	124	86.2	34.8
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)	<0.10	0.23	0.50	0.58	<0.10
	Copper (Cu)-Dissolved (mg/L)	0.00029	<0.00020	<0.00020	0.00023	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.737	12.4	0.393	0.223	0.125
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.153	0.164	0.0214	0.0159	0.0118
	Magnesium (Mg)-Dissolved (mg/L)	35.0	47.3	37.4	28.5	14.6
	Manganese (Mn)-Dissolved (mg/L)	0.121	0.562	0.0667	0.308	0.0821
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000405	0.00250	0.00322	0.00135	0.0265
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00066	0.00365	0.00175	<0.00050
	Potassium (K)-Dissolved (mg/L)	4.92	4.08	2.31	2.00	1.31
	Selenium (Se)-Dissolved (ug/L)	<0.050	<0.050	<0.050	<0.050	0.145
	Silicon (Si)-Dissolved (mg/L)	3.75	6.16	5.27	4.13	4.09
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	21.9	25.9	8.14	4.91	50.8
	Strontium (Sr)-Dissolved (mg/L)	1.91	0.961	0.598	0.299	0.531
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	0.000016	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00047
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000618	0.000669	0.00124	0.00150	0.00208
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0048	<0.0010	0.0036	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2382485-6	L2382485-7	L2382485-8	L2382485-9
		Description	WG	WG	WG	WG
		Sampled Date	14-NOV-19	14-NOV-19	14-NOV-19	14-NOV-19
		Sampled Time	10:45	10:50	10:55	11:00
		Client ID	EV_MW_SPR1C_ WG_2019_Q4_NP	EV_MW_BC10A_ WG_2019_Q4_NP	EV_MW_BC10B_ WG_2019_Q4_NP	EV_MW_BC10C_ WG_2019_Q4_NP
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)		<0.020	<0.020	<0.020	<0.020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.017	0.016	<0.010	<0.010
	Cadmium (Cd)-Dissolved (ug/L)		0.0553	0.0549	<0.0050	<0.0050
	Calcium (Ca)-Dissolved (mg/L)		90.6	92.5	<0.050	<0.050
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (ug/L)		<0.10	<0.10	<0.10	<0.10
	Copper (Cu)-Dissolved (mg/L)		0.00031	0.00032	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0155	0.0158	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		27.8	27.5	<0.10	<0.10
	Manganese (Mn)-Dissolved (mg/L)		0.00014	0.00016	<0.00010	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000782	0.000770	<0.000050	0.000147 <sup>RRV</sup>
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Potassium (K)-Dissolved (mg/L)		1.25	1.24	<0.050	<0.050
	Selenium (Se)-Dissolved (ug/L)		8.12	8.39	<0.050	<0.050
	Silicon (Si)-Dissolved (mg/L)		2.99	2.99	<0.050	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		5.69	5.59	<0.050	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.201	0.204	<0.00020	<0.00020
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	0.00018	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)		0.00109	0.00107	<0.000010	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

## Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L2382485-9	EV_MW_BC10C_WG_2019_	SFPL	Sample was Filtered and Preserved at the laboratory - F-9 DOC/DISSOLVED METALS,Hg LAB FILTERED/PRESERVED
		WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2382485-8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2382485-9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2382485-8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2382485-9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2382485-8
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2382485-9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2382485-8
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2382485-8
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2382485-9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2382485-8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2382485-9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2382485-1, -2, -3, -4, -5, -6, -7, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2382485-8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2382485-9

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
		This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.	
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
		This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.	
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental

## Reference Information

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**C-TOT-ORG-LOW-CL** Water Total Organic Carbon APHA 5310 TOTAL ORGANIC CARBON (TOC)

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL**                      Water              Oxidation reduction potential by elect.                      ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**                      Water              Phosphorus (P)-Total                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL**                      Water              Phosphorus (P)-Total Dissolved                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL**                      Water              pH                      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**                      Water              Orthophosphate-Dissolved (as P)                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water              Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water              Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water              Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

20191114Q4GW

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 1 of 17

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4914627</b>							
<b>WG3221146-6</b>	<b>DUP</b>	<b>L2382485-3</b>						
Acidity (as CaCO3)		23.8	22.8		mg/L	4.3	20	15-NOV-19
<b>WG3221146-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	15-NOV-19
<b>WG3221146-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.4		%		85-115	15-NOV-19
<b>WG3221146-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	15-NOV-19
<b>WG3221146-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	15-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4914599</b>							
<b>WG3221151-12</b>	<b>DUP</b>	<b>L2382485-7</b>						
Alkalinity, Total (as CaCO3)		236	235		mg/L	0.5	20	15-NOV-19
<b>WG3221151-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.7		%		85-115	15-NOV-19
<b>WG3221151-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			96.2		%		85-115	15-NOV-19
<b>WG3221151-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	15-NOV-19
<b>WG3221151-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-NOV-19
<b>WG3221151-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-NOV-19
<b>WG3221151-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-3</b>	<b>DUP</b>	<b>L2382485-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-NOV-19
<b>WG3221428-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.8		%		80-120	18-NOV-19
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	18-NOV-19
<b>WG3221428-4</b>	<b>MS</b>	<b>L2382485-2</b>						
Beryllium (Be)-Dissolved			94.8		%		70-130	18-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 2 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BE-D-L-CCMS-VA</b> <b>Water</b>								
Batch      R4922859								
WG3227330-2 <b>LCS</b>								
Beryllium (Be)-Dissolved			94.0		%		80-120	25-NOV-19
WG3227330-1 <b>MB</b> <b>LF</b>								
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-NOV-19
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch      R4911969								
WG3220375-3 <b>DUP</b> <b>L2382485-9</b>								
Bromide (Br)			<0.050	RPD-NA	mg/L	N/A	20	15-NOV-19
WG3220375-2 <b>LCS</b>								
Bromide (Br)			100.4		%		85-115	15-NOV-19
WG3220375-1 <b>MB</b>								
Bromide (Br)			<0.050		mg/L		0.05	15-NOV-19
WG3220375-4 <b>MS</b> <b>L2382485-9</b>								
Bromide (Br)			110.6		%		75-125	15-NOV-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4913111								
WG3220728-2 <b>LCS</b>								
Dissolved Organic Carbon			95.7		%		80-120	16-NOV-19
WG3220728-1 <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	16-NOV-19
Batch      R4914047								
WG3221079-2 <b>LCS</b>								
Dissolved Organic Carbon			98.1		%		80-120	17-NOV-19
WG3221079-1 <b>MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	17-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch      R4913111								
WG3220728-2 <b>LCS</b>								
Total Organic Carbon			98.1		%		80-120	16-NOV-19
WG3220728-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	16-NOV-19
Batch      R4914047								
WG3221079-2 <b>LCS</b>								
Total Organic Carbon			95.7		%		80-120	17-NOV-19
WG3221079-1 <b>MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	17-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 3 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4911969</b>							
<b>WG3220375-3</b>	<b>DUP</b>	<b>L2382485-9</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3220375-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	15-NOV-19
<b>WG3220375-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-NOV-19
<b>WG3220375-4</b>	<b>MS</b>	<b>L2382485-9</b>						
Chloride (Cl)			108.1		%		75-125	15-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4914599</b>							
<b>WG3221151-12</b>	<b>DUP</b>	<b>L2382485-7</b>						
Conductivity (@ 25C)		587	588		uS/cm	0.2	10	15-NOV-19
<b>WG3221151-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			92.9		%		90-110	15-NOV-19
<b>WG3221151-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			93.6		%		90-110	15-NOV-19
<b>WG3221151-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.2		%		90-110	15-NOV-19
<b>WG3221151-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-NOV-19
<b>WG3221151-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-NOV-19
<b>WG3221151-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-NOV-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4911969</b>							
<b>WG3220375-3</b>	<b>DUP</b>	<b>L2382485-9</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3220375-2</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	15-NOV-19
<b>WG3220375-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-NOV-19
<b>WG3220375-4</b>	<b>MS</b>	<b>L2382485-9</b>						
Fluoride (F)			111.2		%		75-125	15-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 4 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4919230</b>							
<b>WG3223800-3</b>	<b>DUP</b>	<b>L2382485-8</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	21-NOV-19
<b>WG3223800-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.6		%		80-120	21-NOV-19
<b>WG3223800-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	21-NOV-19
<b>WG3223800-4</b>	<b>MS</b>	<b>L2382485-3</b>						
Mercury (Hg)-Dissolved			94.3		%		70-130	21-NOV-19
<b>Batch</b>								
<b>R4920204</b>								
<b>WG3226108-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.3		%		80-120	22-NOV-19
<b>WG3226108-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050C		mg/L		0.000005	22-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-3</b>	<b>DUP</b>	<b>L2382485-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-NOV-19
Antimony (Sb)-Dissolved		0.00017	0.00017		mg/L	1.1	20	18-NOV-19
Arsenic (As)-Dissolved		0.00149	0.00155		mg/L	4.0	20	18-NOV-19
Barium (Ba)-Dissolved		10.6	10.7		mg/L	0.8	20	18-NOV-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-NOV-19
Boron (B)-Dissolved		0.074	0.075		mg/L	1.4	20	18-NOV-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050C	RPD-NA	mg/L	N/A	20	18-NOV-19
Calcium (Ca)-Dissolved		106	105		mg/L	1.7	20	18-NOV-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-19
Copper (Cu)-Dissolved		0.00029	0.00030		mg/L	3.3	20	18-NOV-19
Iron (Fe)-Dissolved		0.737	0.725		mg/L	1.6	20	18-NOV-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-NOV-19
Lithium (Li)-Dissolved		0.153	0.155		mg/L	1.3	20	18-NOV-19
Magnesium (Mg)-Dissolved		35.0	34.7		mg/L	0.8	20	18-NOV-19
Manganese (Mn)-Dissolved		0.121	0.123		mg/L	2.0	20	18-NOV-19
Molybdenum (Mo)-Dissolved		0.000405	0.000420		mg/L	3.5	20	18-NOV-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-NOV-19
Potassium (K)-Dissolved		4.92	4.94		mg/L	0.4	20	18-NOV-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 5 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-3</b>	<b>DUP</b>	<b>L2382485-1</b>						
Silicon (Si)-Dissolved		3.75	3.73		mg/L	0.8	20	18-NOV-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-NOV-19
Sodium (Na)-Dissolved		21.9	21.9		mg/L	0.3	20	18-NOV-19
Strontium (Sr)-Dissolved		1.91	1.90		mg/L	0.4	20	18-NOV-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	18-NOV-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-NOV-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	18-NOV-19
Uranium (U)-Dissolved		0.000618	0.000636		mg/L	2.9	20	18-NOV-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-NOV-19
Zinc (Zn)-Dissolved		0.0048	0.0047		mg/L	1.6	20	18-NOV-19
<b>WG3221428-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.8		%		80-120	18-NOV-19
Antimony (Sb)-Dissolved			100.1		%		80-120	18-NOV-19
Arsenic (As)-Dissolved			102.6		%		80-120	18-NOV-19
Barium (Ba)-Dissolved			98.1		%		80-120	18-NOV-19
Bismuth (Bi)-Dissolved			96.8		%		80-120	18-NOV-19
Boron (B)-Dissolved			94.3		%		80-120	18-NOV-19
Cadmium (Cd)-Dissolved			101.1		%		80-120	18-NOV-19
Calcium (Ca)-Dissolved			97.5		%		80-120	18-NOV-19
Chromium (Cr)-Dissolved			104.0		%		80-120	18-NOV-19
Cobalt (Co)-Dissolved			101.9		%		80-120	18-NOV-19
Copper (Cu)-Dissolved			101.9		%		80-120	18-NOV-19
Iron (Fe)-Dissolved			91.5		%		80-120	18-NOV-19
Lead (Pb)-Dissolved			99.0		%		80-120	18-NOV-19
Lithium (Li)-Dissolved			99.6		%		80-120	18-NOV-19
Magnesium (Mg)-Dissolved			102.4		%		80-120	18-NOV-19
Manganese (Mn)-Dissolved			106.1		%		80-120	18-NOV-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	18-NOV-19
Nickel (Ni)-Dissolved			101.4		%		80-120	18-NOV-19
Potassium (K)-Dissolved			104.6		%		80-120	18-NOV-19
Selenium (Se)-Dissolved			94.2		%		80-120	18-NOV-19
Silicon (Si)-Dissolved			101.7		%		60-140	18-NOV-19
Silver (Ag)-Dissolved			99.9		%		80-120	18-NOV-19
Sodium (Na)-Dissolved			105.0		%		80-120	18-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 6 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			102.2		%		80-120	18-NOV-19
Thallium (Tl)-Dissolved			98.3		%		80-120	18-NOV-19
Tin (Sn)-Dissolved			96.7		%		80-120	18-NOV-19
Titanium (Ti)-Dissolved			99.9		%		80-120	18-NOV-19
Uranium (U)-Dissolved			101.7		%		80-120	18-NOV-19
Vanadium (V)-Dissolved			105.3		%		80-120	18-NOV-19
Zinc (Zn)-Dissolved			98.4		%		80-120	18-NOV-19
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 7 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-NOV-19
<b>WG3221428-4</b>	<b>MS</b>	<b>L2382485-2</b>						
Aluminum (Al)-Dissolved			95.7		%		70-130	18-NOV-19
Antimony (Sb)-Dissolved			94.5		%		70-130	18-NOV-19
Arsenic (As)-Dissolved			101.7		%		70-130	18-NOV-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Bismuth (Bi)-Dissolved			87.8		%		70-130	18-NOV-19
Boron (B)-Dissolved			95.5		%		70-130	18-NOV-19
Cadmium (Cd)-Dissolved			99.6		%		70-130	18-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Chromium (Cr)-Dissolved			94.6		%		70-130	18-NOV-19
Cobalt (Co)-Dissolved			92.3		%		70-130	18-NOV-19
Copper (Cu)-Dissolved			89.3		%		70-130	18-NOV-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Lead (Pb)-Dissolved			92.1		%		70-130	18-NOV-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Molybdenum (Mo)-Dissolved			99.4		%		70-130	18-NOV-19
Nickel (Ni)-Dissolved			89.9		%		70-130	18-NOV-19
Potassium (K)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Selenium (Se)-Dissolved			103.3		%		70-130	18-NOV-19
Silicon (Si)-Dissolved			88.5		%		70-130	18-NOV-19
Silver (Ag)-Dissolved			99.4		%		70-130	18-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	18-NOV-19
Thallium (Tl)-Dissolved			91.6		%		70-130	18-NOV-19
Tin (Sn)-Dissolved			96.2		%		70-130	18-NOV-19
Titanium (Ti)-Dissolved			96.4		%		70-130	18-NOV-19
Uranium (U)-Dissolved			97.3		%		70-130	18-NOV-19
Vanadium (V)-Dissolved			99.1		%		70-130	18-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 8 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915189</b>							
<b>WG3221428-4</b>	<b>MS</b>	<b>L2382485-2</b>						
Zinc (Zn)-Dissolved			90.8		%		70-130	18-NOV-19
<b>Batch</b>	<b>R4916077</b>							
<b>WG3221931-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.7		%		80-120	19-NOV-19
Antimony (Sb)-Dissolved			96.2		%		80-120	19-NOV-19
Arsenic (As)-Dissolved			95.9		%		80-120	19-NOV-19
Barium (Ba)-Dissolved			98.2		%		80-120	19-NOV-19
Bismuth (Bi)-Dissolved			95.3		%		80-120	19-NOV-19
Boron (B)-Dissolved			99.6		%		80-120	19-NOV-19
Cadmium (Cd)-Dissolved			95.8		%		80-120	19-NOV-19
Calcium (Ca)-Dissolved			98.3		%		80-120	19-NOV-19
Chromium (Cr)-Dissolved			96.0		%		80-120	19-NOV-19
Cobalt (Co)-Dissolved			93.3		%		80-120	19-NOV-19
Copper (Cu)-Dissolved			92.5		%		80-120	19-NOV-19
Iron (Fe)-Dissolved			94.5		%		80-120	19-NOV-19
Lead (Pb)-Dissolved			95.0		%		80-120	19-NOV-19
Lithium (Li)-Dissolved			95.5		%		80-120	19-NOV-19
Magnesium (Mg)-Dissolved			96.2		%		80-120	19-NOV-19
Manganese (Mn)-Dissolved			95.0		%		80-120	19-NOV-19
Molybdenum (Mo)-Dissolved			99.5		%		80-120	19-NOV-19
Nickel (Ni)-Dissolved			95.9		%		80-120	19-NOV-19
Potassium (K)-Dissolved			102.1		%		80-120	19-NOV-19
Selenium (Se)-Dissolved			94.6		%		80-120	19-NOV-19
Silicon (Si)-Dissolved			103.4		%		60-140	19-NOV-19
Silver (Ag)-Dissolved			97.5		%		80-120	19-NOV-19
Sodium (Na)-Dissolved			95.4		%		80-120	19-NOV-19
Strontium (Sr)-Dissolved			99.3		%		80-120	19-NOV-19
Thallium (Tl)-Dissolved			94.8		%		80-120	19-NOV-19
Tin (Sn)-Dissolved			95.3		%		80-120	19-NOV-19
Titanium (Ti)-Dissolved			95.5		%		80-120	19-NOV-19
Uranium (U)-Dissolved			96.1		%		80-120	19-NOV-19
Vanadium (V)-Dissolved			95.8		%		80-120	19-NOV-19
Zinc (Zn)-Dissolved			97.3		%		80-120	19-NOV-19
<b>WG3221931-1</b>	<b>MB</b>	<b>NP</b>						





## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 9 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916077</b>							
<b>WG3221931-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	19-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	19-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	19-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	19-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	19-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	19-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	19-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	19-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	19-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	19-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	19-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	19-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	19-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	19-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	19-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	19-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	19-NOV-19
<b>Batch</b>	<b>R4922859</b>							
<b>WG3227330-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			98.3		%		80-120	25-NOV-19
Antimony (Sb)-Dissolved			92.9		%		80-120	25-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 10 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922859</b>							
<b>WG3227330-2</b>	<b>LCS</b>							
Arsenic (As)-Dissolved			98.3		%		80-120	25-NOV-19
Barium (Ba)-Dissolved			99.0		%		80-120	25-NOV-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	25-NOV-19
Boron (B)-Dissolved			98.1		%		80-120	25-NOV-19
Cadmium (Cd)-Dissolved			96.5		%		80-120	25-NOV-19
Calcium (Ca)-Dissolved			98.0		%		80-120	25-NOV-19
Chromium (Cr)-Dissolved			99.4		%		80-120	25-NOV-19
Cobalt (Co)-Dissolved			100.5		%		80-120	25-NOV-19
Copper (Cu)-Dissolved			95.6		%		80-120	25-NOV-19
Iron (Fe)-Dissolved			93.2		%		80-120	25-NOV-19
Lead (Pb)-Dissolved			93.4		%		80-120	25-NOV-19
Lithium (Li)-Dissolved			101.1		%		80-120	25-NOV-19
Magnesium (Mg)-Dissolved			96.3		%		80-120	25-NOV-19
Manganese (Mn)-Dissolved			100.5		%		80-120	25-NOV-19
Molybdenum (Mo)-Dissolved			95.5		%		80-120	25-NOV-19
Nickel (Ni)-Dissolved			97.5		%		80-120	25-NOV-19
Potassium (K)-Dissolved			99.2		%		80-120	25-NOV-19
Selenium (Se)-Dissolved			98.3		%		80-120	25-NOV-19
Silicon (Si)-Dissolved			101.4		%		60-140	25-NOV-19
Silver (Ag)-Dissolved			91.6		%		80-120	25-NOV-19
Sodium (Na)-Dissolved			105.9		%		80-120	25-NOV-19
Strontium (Sr)-Dissolved			94.3		%		80-120	25-NOV-19
Thallium (Tl)-Dissolved			91.8		%		80-120	25-NOV-19
Tin (Sn)-Dissolved			93.1		%		80-120	25-NOV-19
Titanium (Ti)-Dissolved			94.5		%		80-120	25-NOV-19
Uranium (U)-Dissolved			95.2		%		80-120	25-NOV-19
Vanadium (V)-Dissolved			100.3		%		80-120	25-NOV-19
Zinc (Zn)-Dissolved			96.6		%		80-120	25-NOV-19
<b>WG3227330-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 11 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922859</b>							
<b>WG3227330-1</b>	<b>MB</b>	<b>LF</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4917048</b>							
<b>WG3222545-2</b>	<b>LCS</b>							
Ammonia as N			107.5		%		85-115	19-NOV-19
<b>WG3222545-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 12 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Batch R4911969</b>								
<b>WG3220375-3</b>	<b>DUP</b>	<b>L2382485-9</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3220375-2</b>	<b>LCS</b>							
Nitrite (as N)			102.4		%		90-110	15-NOV-19
<b>WG3220375-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-NOV-19
<b>WG3220375-4</b>	<b>MS</b>	<b>L2382485-9</b>						
Nitrite (as N)			109.7		%		75-125	15-NOV-19
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4911969</b>								
<b>WG3220375-3</b>	<b>DUP</b>	<b>L2382485-9</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3220375-2</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	15-NOV-19
<b>WG3220375-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-NOV-19
<b>WG3220375-4</b>	<b>MS</b>	<b>L2382485-9</b>						
Nitrate (as N)			108.5		%		75-125	15-NOV-19
<b>ORP-CL</b>								
<b>Batch R4911508</b>								
<b>WG3220205-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	15-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4918048</b>								
<b>WG3223758-8</b>	<b>DUP</b>	<b>L2382485-1</b>						
Phosphorus (P)-Total		0.0072	0.0075		mg/L	3.7	20	20-NOV-19
<b>WG3223758-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.3		%		80-120	20-NOV-19
<b>WG3223758-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			103.4		%		80-120	20-NOV-19
<b>WG3223758-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-NOV-19
<b>WG3223758-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	20-NOV-19
<b>WG3223758-7</b>	<b>MS</b>	<b>L2382485-1</b>						
Phosphorus (P)-Total			123.5		%		70-130	20-NOV-19
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 13 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>P-TD-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4918048</b>							
<b>WG3223758-8</b>	<b>DUP</b>	<b>L2382485-1</b>						
Phosphorus (P)-Total	Dissolved	0.0052	0.0048		mg/L	9.0	20	20-NOV-19
<b>WG3223758-2</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		102.2		%		80-120	20-NOV-19
<b>WG3223758-6</b>	<b>LCS</b>							
Phosphorus (P)-Total	Dissolved		103.4		%		80-120	20-NOV-19
<b>WG3223758-1</b>	<b>MB</b>							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	20-NOV-19
<b>WG3223758-5</b>	<b>MB</b>							
Phosphorus (P)-Total	Dissolved		<0.0020		mg/L		0.002	20-NOV-19
<b>WG3223758-7</b>	<b>MS</b>	<b>L2382485-1</b>						
Phosphorus (P)-Total	Dissolved		114.1		%		70-130	20-NOV-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4914599</b>							
<b>WG3221151-12</b>	<b>DUP</b>	<b>L2382485-7</b>						
pH		7.91	7.87	J	pH	0.04	0.2	15-NOV-19
<b>WG3221151-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	15-NOV-19
<b>WG3221151-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	15-NOV-19
<b>WG3221151-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	15-NOV-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4910869</b>							
<b>WG3219963-9</b>	<b>DUP</b>	<b>L2382485-9</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3219963-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.9		%		80-120	15-NOV-19
<b>WG3219963-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-NOV-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4911969</b>							
<b>WG3220375-3</b>	<b>DUP</b>	<b>L2382485-9</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	15-NOV-19
<b>WG3220375-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.4		%		90-110	15-NOV-19
<b>WG3220375-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	15-NOV-19



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 14 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
Batch	R4911969							
WG3220375-4	MS	L2382485-9	107.9		%		75-125	15-NOV-19
Sulfate (SO4)								
<b>SOLIDS-TDS-CL</b>								
Batch	R4915195							
WG3220685-6	DUP	L2382485-2	719		mg/L	4.3	20	17-NOV-19
Total Dissolved Solids								
WG3220685-5	LCS		102.5		%		85-115	17-NOV-19
Total Dissolved Solids								
WG3220685-4	MB		<10		mg/L		10	17-NOV-19
Total Dissolved Solids								
<b>TKN-L-F-CL</b>								
Batch	R4912590							
WG3220521-11	DUP	L2382485-9	<0.050	RPD-NA	mg/L	N/A	20	16-NOV-19
Total Kjeldahl Nitrogen								
WG3220521-10	LCS		91.0		%		75-125	16-NOV-19
Total Kjeldahl Nitrogen								
WG3220521-6	LCS		91.3		%		75-125	16-NOV-19
Total Kjeldahl Nitrogen								
WG3220521-5	MB		<0.050		mg/L		0.05	16-NOV-19
Total Kjeldahl Nitrogen								
WG3220521-9	MB		<0.050		mg/L		0.05	16-NOV-19
Total Kjeldahl Nitrogen								
WG3220521-12	MS	L2382485-9	114.4		%		70-130	16-NOV-19
Total Kjeldahl Nitrogen								
<b>TSS-L-CL</b>								
Batch	R4916100							
WG3221140-10	LCS		100.3		%		85-115	18-NOV-19
Total Suspended Solids								
WG3221140-9	MB		<1.0		mg/L		1	18-NOV-19
Total Suspended Solids								
<b>TURBIDITY-CL</b>								
Batch	R4911451							
WG3220150-6	DUP	L2382485-2	155		NTU	0.0	15	15-NOV-19
Turbidity								
WG3220150-2	LCS		97.0		%		85-115	15-NOV-19
Turbidity								
WG3220150-5	LCS							



## Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 15 of 17

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4911451</b>							
<b>WG3220150-5</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	15-NOV-19
<b>WG3220150-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-NOV-19
<b>WG3220150-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	15-NOV-19

# Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 16 of 17

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2382485

Report Date: 25-NOV-19

Page 17 of 17

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	14-NOV-19 08:55	15-NOV-19 12:00	0.25	27	hours	EHTR-FM
	2	14-NOV-19 09:00	15-NOV-19 12:00	0.25	27	hours	EHTR-FM
	3	14-NOV-19 14:05	15-NOV-19 12:00	0.25	22	hours	EHTR-FM
	4	14-NOV-19 11:55	15-NOV-19 12:00	0.25	24	hours	EHTR-FM
	5	14-NOV-19 11:10	15-NOV-19 12:00	0.25	25	hours	EHTR-FM
	6	14-NOV-19 10:45	15-NOV-19 12:00	0.25	25	hours	EHTR-FM
	7	14-NOV-19 10:50	15-NOV-19 12:00	0.25	25	hours	EHTR-FM
	8	14-NOV-19 10:55	15-NOV-19 12:00	0.25	25	hours	EHTR-FM
	9	14-NOV-19 11:00	15-NOV-19 12:00	0.25	25	hours	EHTR-FM
pH							
	1	14-NOV-19 08:55	15-NOV-19 14:00	0.25	29	hours	EHTR-FM
	2	14-NOV-19 09:00	15-NOV-19 14:00	0.25	29	hours	EHTR-FM
	3	14-NOV-19 14:05	15-NOV-19 14:00	0.25	24	hours	EHTR-FM
	4	14-NOV-19 11:55	15-NOV-19 14:00	0.25	26	hours	EHTR-FM
	5	14-NOV-19 11:10	15-NOV-19 14:00	0.25	27	hours	EHTR-FM
	6	14-NOV-19 10:45	15-NOV-19 14:00	0.25	27	hours	EHTR-FM
	7	14-NOV-19 10:50	15-NOV-19 14:00	0.25	27	hours	EHTR-FM
	8	14-NOV-19 10:55	15-NOV-19 14:00	0.25	27	hours	EHTR-FM
	9	14-NOV-19 11:00	15-NOV-19 14:00	0.25	27	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Orthophosphate-Dissolved (as P)							
	1	14-NOV-19 08:55	20-NOV-19 17:00	3	6	days	EHT

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2382485 were received on 15-NOV-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 20191114Q4GW      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com		
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com		
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com		
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com		
								Email 5:	teckcoal@equisonline.com		
City	Sparwood	Province	BC	City	Calgary	Province	AB				
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada				
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852		

SAMPLE DETAILS								ANALYSIS REQUESTED										
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury
1 EV_MW_MC1A_WG_2019_Q4_NP	EV_MW_MC1A	WG	N	11/14/2019	8:55	G	5	1	1	1		1					1	
2 EV_MW_MC1B_WG_2019_Q4_NP	EV_MW_MC1B	WG	N	11/14/2019	9:00	G	5	1	1	1		1					1	
3 EV_MW_MC4_WG_2019_Q4_NP	EV_MW_MC4	WG	N	11/14/2019	14:05	G	5	1	1	1		1					1	
4 EV_MW_SPR1A_WG_2019_Q4_NP	EV_MW_SPR1A	WG	N	11/14/2019	11:55	G	5	1	1	1		1					1	
5 EV_MW_SPR1B_WG_2019_Q4_NP	EV_MW_SPR1B	WG	N	11/14/2019	11:10	G	5	1	1	1		1					1	
6 EV_MW_SPR1C_WG_2019_Q4_NP	EV_MW_SPR1C	WG	N	11/14/2019	10:45	G	5	1	1	1		1					1	
7 EV_MW_BC10A_WG_2019_Q4_NP	EV_MW_BC10A	WG	N	11/14/2019	10:50	G	5	1	1	1		1					1	
8 EV_MW_BC10B_WG_2019_Q4_NP	EV_MW_BC10B	WG	N	11/14/2019	10:55	G	5	1	1	1		1					1	
9 EV_MW_BC10C_WG_2019_Q4_NP	EV_MW_BC10C	WG	N	11/14/2019	11:00	G	5	1	1	1		1					1	
							Total	45										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MW_BC10C has not been preserved or filtered	Kimberley Hackett	November 14, 2019		11/15 9:05
SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	Kimberley Hackett	Mobile #	
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	November 14, 2019
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

7C



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 20-NOV-19  
Report Date: 25-NOV-19 15:04 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2384712  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191119Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2384712-1	L2384712-2		
		Description	WG	WG		
		Sampled Date	19-NOV-19	19-NOV-19		
		Sampled Time	15:10	13:05		
		Client ID	EV_MW_AQ1_WG _2019_Q4_NP	EV_MW_AQ2_WG _2019_Q4_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	842	1080			
	Hardness (as CaCO3) (mg/L)	474	617			
	pH (pH)	8.11	8.11			
	ORP (mV)	447	396			
	Total Suspended Solids (mg/L)	<1.0	1.2			
	Total Dissolved Solids (mg/L)	502 <sup>DLHC</sup>	696 <sup>DLHC</sup>			
	Turbidity (NTU)	0.78	5.67			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	25.7	33.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	360	472			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	360	472			
	Ammonia as N (mg/L)	<0.0050	0.0544			
	Bromide (Br) (mg/L)	0.126	<0.25 <sup>DLHC</sup>			
	Chloride (Cl) (mg/L)	31.5	14.6 <sup>DLHC</sup>			
	Fluoride (F) (mg/L)	0.252	0.18 <sup>DLHC</sup>			
	Ion Balance (%)	100	100			
	Nitrate (as N) (mg/L)	0.150	<0.025 <sup>DLHC</sup>			
	Nitrite (as N) (mg/L)	<0.0010	<0.0050 <sup>DLHC</sup>			
	Total Kjeldahl Nitrogen (mg/L)	<0.050	0.054			
	Total Nitrogen (mg/L)	0.150	<0.056			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0149	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0140	<0.0020			
	Phosphorus (P)-Total (mg/L)	0.017 <sup>DLM</sup>	<0.0020 <sup>DLHC</sup>			
	Sulfate (SO4) (mg/L)	77.7	160			
	Anion Sum (meq/L)	9.73	13.2			
	Cation Sum (meq/L)	9.73	13.2			
Cation - Anion Balance (%)	0.0	0.1				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.96	0.86			
	Total Organic Carbon (mg/L)	0.79	0.91			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00012	0.00014			
	Barium (Ba)-Dissolved (mg/L)	0.168	0.0182			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2384712-1	L2384712-2		
		Description	WG	WG		
		Sampled Date	19-NOV-19	19-NOV-19		
		Sampled Time	15:10	13:05		
		Client ID	EV_MW_AQ1_WG _2019_Q4_NP	EV_MW_AQ2_WG _2019_Q4_NP		
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.025	0.103			
	Cadmium (Cd)-Dissolved (ug/L)	0.0404	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	116	154			
	Chromium (Cr)-Dissolved (mg/L)	0.00011	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00277	<0.00020			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.576			
	Lead (Pb)-Dissolved (mg/L)	0.000157	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0215	0.0556			
	Magnesium (Mg)-Dissolved (mg/L)	44.8	56.4			
	Manganese (Mn)-Dissolved (mg/L)	0.00030	0.0810			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000350	0.000317			
	Nickel (Ni)-Dissolved (mg/L)	0.00086	0.00061			
	Potassium (K)-Dissolved (mg/L)	1.61	2.00			
	Selenium (Se)-Dissolved (ug/L)	2.46	<0.050			
	Silicon (Si)-Dissolved (mg/L)	3.97	6.69			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.73	18.4			
	Strontium (Sr)-Dissolved (mg/L)	0.373	1.23			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000440	0.000114			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0064	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2384712-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2384712-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2384712-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2384712-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2384712-1, -2

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B

## Reference Information

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 µm), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 µm), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**N-T-CALC-CL** Water Total Nitrogen (Calculation) APHA 4500 N-Calculated

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**P-TD-L-COL-CL** Water Phosphorus (P)-Total Dissolved APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)

## Reference Information

should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

---

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

20191119Q4GW

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4919572							
<b>WG3224497-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			113.8		%		85-115	20-NOV-19
<b>WG3224497-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	20-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4920738							
<b>WG3225715-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	21-NOV-19
<b>WG3225715-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4922395							
<b>WG3226649-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.2		%		80-120	24-NOV-19
<b>WG3226649-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Bromide (Br)			96.6		%		85-115	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	20-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4920688							
<b>WG3225773-3</b>	<b>DUP</b>	<b>L2384712-1</b>						
Dissolved Organic Carbon		0.96	1.14		mg/L	17	20	21-NOV-19
<b>WG3225773-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.4		%		80-120	21-NOV-19
<b>WG3225773-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-NOV-19
<b>WG3225773-4</b>	<b>MS</b>	<b>L2384712-2</b>						
Dissolved Organic Carbon			92.7		%		70-130	21-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4920688							
<b>WG3225773-3</b>	<b>DUP</b>	<b>L2384712-1</b>						
Total Organic Carbon		0.79	0.77		mg/L	2.2	20	21-NOV-19
<b>WG3225773-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
<b>Water</b>								
Batch	R4920688							
<b>WG3225773-2</b>	<b>LCS</b>							
Total Organic Carbon			105.4		%		80-120	21-NOV-19
<b>WG3225773-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	21-NOV-19
<b>WG3225773-4</b>	<b>MS</b>	<b>L2384712-2</b>						
Total Organic Carbon			95.4		%		70-130	21-NOV-19
<b>CL-IC-N-CL</b>								
<b>Water</b>								
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Chloride (Cl)			100.0		%		90-110	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	20-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Water</b>								
Batch	R4920738							
<b>WG3225715-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.5		%		90-110	21-NOV-19
<b>WG3225715-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	21-NOV-19
<b>F-IC-N-CL</b>								
<b>Water</b>								
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Fluoride (F)			97.3		%		90-110	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	20-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
Batch	R4920204							
<b>WG3225020-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.7		%		80-120	22-NOV-19
<b>WG3225020-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	22-NOV-19
Batch	R4921771							
<b>WG3226340-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.9		%		80-120	23-NOV-19
<b>WG3226340-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	23-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922395</b>							
<b>WG3226649-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.1		%		80-120	24-NOV-19
Antimony (Sb)-Dissolved			104.7		%		80-120	24-NOV-19
Arsenic (As)-Dissolved			100.9		%		80-120	24-NOV-19
Barium (Ba)-Dissolved			98.9		%		80-120	24-NOV-19
Bismuth (Bi)-Dissolved			100.3		%		80-120	24-NOV-19
Boron (B)-Dissolved			105.2		%		80-120	24-NOV-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	24-NOV-19
Calcium (Ca)-Dissolved			105.6		%		80-120	24-NOV-19
Chromium (Cr)-Dissolved			102.7		%		80-120	24-NOV-19
Cobalt (Co)-Dissolved			101.2		%		80-120	24-NOV-19
Copper (Cu)-Dissolved			101.3		%		80-120	24-NOV-19
Iron (Fe)-Dissolved			99.2		%		80-120	24-NOV-19
Lead (Pb)-Dissolved			97.6		%		80-120	24-NOV-19
Lithium (Li)-Dissolved			98.7		%		80-120	24-NOV-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	24-NOV-19
Manganese (Mn)-Dissolved			107.3		%		80-120	24-NOV-19
Molybdenum (Mo)-Dissolved			108.8		%		80-120	24-NOV-19
Nickel (Ni)-Dissolved			100.3		%		80-120	24-NOV-19
Potassium (K)-Dissolved			101.2		%		80-120	24-NOV-19
Selenium (Se)-Dissolved			100.2		%		80-120	24-NOV-19
Silicon (Si)-Dissolved			105.5		%		60-140	24-NOV-19
Silver (Ag)-Dissolved			106.0		%		80-120	24-NOV-19
Sodium (Na)-Dissolved			103.2		%		80-120	24-NOV-19
Strontium (Sr)-Dissolved			109.2		%		80-120	24-NOV-19
Thallium (Tl)-Dissolved			98.3		%		80-120	24-NOV-19
Tin (Sn)-Dissolved			100.2		%		80-120	24-NOV-19
Titanium (Ti)-Dissolved			102.0		%		80-120	24-NOV-19
Uranium (U)-Dissolved			99.3		%		80-120	24-NOV-19
Vanadium (V)-Dissolved			101.6		%		80-120	24-NOV-19
Zinc (Zn)-Dissolved			103.3		%		80-120	24-NOV-19
<b>WG3226649-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19



## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922395</b>							
<b>WG3226649-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4920566</b>							
<b>WG3224992-6</b>	<b>LCS</b>							
Ammonia as N			106.6		%		85-115	21-NOV-19
<b>WG3224992-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Nitrite (as N)			99.7		%		90-110	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	20-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	20-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4920669							
<b>WG3225598-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	21-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4921997							
<b>WG3226760-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			90.7		%		80-120	23-NOV-19
<b>WG3226760-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4921997							
<b>WG3226760-2</b>	<b>LCS</b>							
Phosphorus (P)-Total Dissolved			90.7		%		80-120	23-NOV-19
<b>WG3226760-1</b>	<b>MB</b>							
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	23-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4920738							
<b>WG3225715-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	21-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4919414							
<b>WG3223959-5</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.5		%		80-120	20-NOV-19
<b>WG3223959-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch	R4919414							
<b>WG3223959-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	20-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch	R4919591							
<b>WG3224740-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.8		%		90-110	20-NOV-19
<b>WG3224740-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	20-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch	R4919626							
<b>WG3223316-11</b>	<b>LCS</b>							
Total Dissolved Solids			97.9		%		85-115	20-NOV-19
<b>WG3223316-10</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	20-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch	R4919866							
<b>WG3224708-7</b>	<b>DUP</b>	<b>L2384712-2</b>						
Total Kjeldahl Nitrogen		0.054	0.052		mg/L	3.9	20	21-NOV-19
<b>WG3224708-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			94.6		%		75-125	21-NOV-19
<b>WG3224708-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-NOV-19
<b>WG3224708-8</b>	<b>MS</b>	<b>L2384712-2</b>						
Total Kjeldahl Nitrogen			110.5		%		70-130	21-NOV-19
<b>TSS-L-CL</b> <b>Water</b>								
Batch	R4919539							
<b>WG3223850-4</b>	<b>LCS</b>							
Total Suspended Solids			94.9		%		85-115	20-NOV-19
<b>WG3223850-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	20-NOV-19
<b>TURBIDITY-CL</b> <b>Water</b>								
Batch	R4919330							
<b>WG3224000-2</b>	<b>LCS</b>							
Turbidity			99.5		%		85-115	20-NOV-19
<b>WG3224000-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	20-NOV-19

# Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2384712

Report Date: 25-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	19-NOV-19 15:10	21-NOV-19 12:00	0.25	45	hours	EHTR-FM
	2	19-NOV-19 13:05	21-NOV-19 12:00	0.25	47	hours	EHTR-FM
pH	1	19-NOV-19 15:10	21-NOV-19 09:00	0.25	42	hours	EHTR-FM
	2	19-NOV-19 13:05	21-NOV-19 09:00	0.25	44	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2384712 were received on 20-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: 20191119Q4GW

TURNAROUND TIME:

RUSH:

PROJECT/CUSTOMER INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck Lab Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**



L2384712-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED														
								TECKCOAL-ROUTINE-VA (E305.1)	TECKCOAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury				
EV_MW_AQ1_WG_2019_Q4_NP	EV_MW_AQ1	WG	N	11/19/2019	15:10	G	5	1	1	1	1											
EV_MW_AQ2_WG_2019_Q4_NP	EV_MW_AQ2	WG	N	11/19/2019	13:05	G	5	1	1	1	1											
Total							10															

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

EV_MW_BC10C has not been preserved or filtered	Jason Gravelle	November 19, 2019	<i>JG</i>	11/19/2019 0900
--	----------------	-------------------	-----------	-----------------

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jason Gravelle	Mobile #	
				Sampler's Signature	<i>Jason Gravelle</i>	Date/Time	November 19, 2019

*60*



Teck Coal Ltd. (Elkview)  
ATTN: Cameron Griffin  
RR#1 HIGHWAY #3  
SPARWOOD BC V1C 4C3

Date Received: 21-NOV-19  
Report Date: 28-NOV-19 14:14 (MT)  
Version: FINAL

Client Phone: 250-425-8746

## Certificate of Analysis

Lab Work Order #: L2385817  
Project P.O. #: VPO00610852  
Job Reference: ELKVIEW OPERATIONS  
C of C Numbers: 20191120Q4GW  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2385817-1 WG 20-NOV-19 13:45 EV_WF_SW_WG_ 2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	383			
	Hardness (as CaCO3) (mg/L)	187			
	pH (pH)	8.16			
	ORP (mV)	279			
	Total Suspended Solids (mg/L)	7.8			
	Total Dissolved Solids (mg/L)	261			
	Turbidity (NTU)	8.35			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.3			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	39.3			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	39.3			
	Ammonia as N (mg/L)	0.191			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	2.68			
	Fluoride (F) (mg/L)	0.056			
	Ion Balance (%)	95.5			
	Nitrate (as N) (mg/L)	<0.0050			
	Nitrite (as N) (mg/L)	0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.323			
	Total Nitrogen (mg/L)	0.324			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total Dissolved (mg/L)	0.0066			
	Phosphorus (P)-Total (mg/L)	0.0090			
	Sulfate (SO4) (mg/L)	161			
	Anion Sum (meq/L)	4.22			
	Cation Sum (meq/L)	4.02			
	Cation - Anion Balance (%)	-2.3			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.32			
	Total Organic Carbon (mg/L)	2.10			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00014			
	Arsenic (As)-Dissolved (mg/L)	0.00013			
	Barium (Ba)-Dissolved (mg/L)	0.00685			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2385817-1 WG 20-NOV-19 13:45 EV_WF_SW_WG_ 2019_Q4_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	<0.0050			
	Calcium (Ca)-Dissolved (mg/L)	12.1			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00074			
	Iron (Fe)-Dissolved (mg/L)	0.029			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0093			
	Magnesium (Mg)-Dissolved (mg/L)	38.0			
	Manganese (Mn)-Dissolved (mg/L)	0.207			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000587			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	2.75			
	Selenium (Se)-Dissolved (ug/L)	<0.050			
	Silicon (Si)-Dissolved (mg/L)	<0.050			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	4.70			
	Strontium (Sr)-Dissolved (mg/L)	0.00807			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	0.00017			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	<0.000010			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L2385817-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2385817-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2385817-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2385817-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2385817-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2385817-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2385817-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2385817-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.        TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			

## Reference Information

<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>N-T-CALC-CL</b>	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>P-TD-L-COL-CL</b>	Water	Phosphorus (P)-Total Dissolved	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

20191120Q4GW

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

- mg/kg - milligrams per kilogram based on dry weight of sample.*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample.*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*
- mg/L - milligrams per litre.*
- < - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*  
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*  
**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**  
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



# Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 1 of 8

Client: Teck Coal Ltd. (Elkview)  
 RR#1 HIGHWAY #3  
 SPARWOOD BC V1C 4C3  
 Contact: Cameron Griffin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926867</b>							
<b>WG3229600-12</b>	<b>DUP</b>	<b>L2385817-1</b>						
Acidity (as CaCO3)		1.3	1.5		mg/L	14	20	27-NOV-19
<b>WG3229600-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			111.2		%		85-115	27-NOV-19
<b>WG3229600-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	27-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4923509</b>							
<b>WG3228260-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			105.2		%		85-115	25-NOV-19
<b>WG3228260-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	25-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922395</b>							
<b>WG3226905-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			100.0		%		80-120	24-NOV-19
<b>WG3226905-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	24-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921455</b>							
<b>WG3226103-6</b>	<b>LCS</b>							
Bromide (Br)			99.0		%		85-115	21-NOV-19
<b>WG3226103-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	21-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922038</b>							
<b>WG3226800-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.6		%		80-120	23-NOV-19
<b>WG3226800-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	23-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922038</b>							
<b>WG3226800-2</b>	<b>LCS</b>							
Total Organic Carbon			99.5		%		80-120	23-NOV-19
<b>WG3226800-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	23-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4921455							
<b>WG3226103-6</b>	<b>LCS</b>							
Chloride (Cl)			99.99		%		90-110	21-NOV-19
<b>WG3226103-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	21-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4923509							
<b>WG3228260-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.2		%		90-110	25-NOV-19
<b>WG3228260-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	25-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4921455							
<b>WG3226103-6</b>	<b>LCS</b>							
Fluoride (F)			105.2		%		90-110	21-NOV-19
<b>WG3226103-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	21-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4922147							
<b>WG3226700-15</b>	<b>DUP</b>	<b>L2385817-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-NOV-19
<b>WG3226700-14</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.5		%		80-120	24-NOV-19
<b>WG3226700-13</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	24-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4922395							
<b>WG3226905-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.9		%		80-120	24-NOV-19
Antimony (Sb)-Dissolved			97.6		%		80-120	24-NOV-19
Arsenic (As)-Dissolved			96.9		%		80-120	24-NOV-19
Barium (Ba)-Dissolved			96.6		%		80-120	24-NOV-19
Bismuth (Bi)-Dissolved			104.6		%		80-120	24-NOV-19
Boron (B)-Dissolved			94.8		%		80-120	24-NOV-19
Cadmium (Cd)-Dissolved			95.1		%		80-120	24-NOV-19
Calcium (Ca)-Dissolved			98.8		%		80-120	24-NOV-19
Chromium (Cr)-Dissolved			100.8		%		80-120	24-NOV-19



## Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922395</b>							
<b>WG3226905-2</b>	<b>LCS</b>							
Cobalt (Co)-Dissolved			94.4		%		80-120	24-NOV-19
Copper (Cu)-Dissolved			96.9		%		80-120	24-NOV-19
Iron (Fe)-Dissolved			85.8		%		80-120	24-NOV-19
Lead (Pb)-Dissolved			92.7		%		80-120	24-NOV-19
Lithium (Li)-Dissolved			95.8		%		80-120	24-NOV-19
Magnesium (Mg)-Dissolved			94.2		%		80-120	24-NOV-19
Manganese (Mn)-Dissolved			99.6		%		80-120	24-NOV-19
Molybdenum (Mo)-Dissolved			100.5		%		80-120	24-NOV-19
Nickel (Ni)-Dissolved			95.3		%		80-120	24-NOV-19
Potassium (K)-Dissolved			99.6		%		80-120	24-NOV-19
Selenium (Se)-Dissolved			94.7		%		80-120	24-NOV-19
Silicon (Si)-Dissolved			99.2		%		60-140	24-NOV-19
Silver (Ag)-Dissolved			98.7		%		80-120	24-NOV-19
Sodium (Na)-Dissolved			98.0		%		80-120	24-NOV-19
Strontium (Sr)-Dissolved			100.5		%		80-120	24-NOV-19
Thallium (Tl)-Dissolved			94.4		%		80-120	24-NOV-19
Tin (Sn)-Dissolved			93.5		%		80-120	24-NOV-19
Titanium (Ti)-Dissolved			99.0		%		80-120	24-NOV-19
Uranium (U)-Dissolved			96.9		%		80-120	24-NOV-19
Vanadium (V)-Dissolved			98.1		%		80-120	24-NOV-19
Zinc (Zn)-Dissolved			98.5		%		80-120	24-NOV-19
<b>WG3226905-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	24-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	24-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	24-NOV-19



## Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4922395</b>							
<b>WG3226905-1</b>	<b>MB</b>	<b>NP</b>						
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	24-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	24-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	24-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	24-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	24-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	24-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	24-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	24-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	24-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	24-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4920566</b>							
<b>WG3224992-22</b>	<b>LCS</b>							
Ammonia as N			96.6		%		85-115	21-NOV-19
<b>WG3224992-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	21-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921455</b>							
<b>WG3226103-6</b>	<b>LCS</b>							
Nitrite (as N)			99.2		%		90-110	21-NOV-19
<b>WG3226103-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	21-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4921455</b>							
<b>WG3226103-6</b>	<b>LCS</b>							
Nitrate (as N)			100.6		%		90-110	21-NOV-19
<b>WG3226103-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4921455							
<b>WG3226103-5 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	21-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4921776							
<b>WG3226063-5 CRM</b>		<b>CL-ORP</b>						
ORP			227		mV		210-230	22-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4921997							
<b>WG3226760-10 LCS</b>								
Phosphorus (P)-Total			90.3		%		80-120	23-NOV-19
<b>WG3226760-9 MB</b>								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-NOV-19
<b>P-TD-L-COL-CL</b>	<b>Water</b>							
Batch	R4921997							
<b>WG3226760-10 LCS</b>								
Phosphorus (P)-Total Dissolved			90.3		%		80-120	23-NOV-19
<b>WG3226760-9 MB</b>								
Phosphorus (P)-Total Dissolved			<0.0020		mg/L		0.002	23-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4923509							
<b>WG3228260-2 LCS</b>								
pH			7.01		pH		6.9-7.1	25-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4920017							
<b>WG3225093-4 LCS</b>								
Orthophosphate-Dissolved (as P)			102.5		%		80-120	21-NOV-19
<b>WG3225093-1 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	21-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4921455							
<b>WG3226103-6 LCS</b>								
Sulfate (SO4)			105.7		%		90-110	21-NOV-19
<b>WG3226103-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	21-NOV-19



## Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4922588							
<b>WG3225678-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.6		%		85-115	22-NOV-19
<b>WG3225678-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	22-NOV-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4921594							
<b>WG3225947-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.0		%		75-125	22-NOV-19
<b>WG3225947-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	22-NOV-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4920850							
<b>WG3224850-4</b>	<b>LCS</b>							
Total Suspended Solids			91.3		%		85-115	21-NOV-19
<b>WG3224850-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	21-NOV-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4920627							
<b>WG3225162-8</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	21-NOV-19
<b>WG3225162-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	21-NOV-19

# Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2385817

Report Date: 28-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	20-NOV-19 13:45	22-NOV-19 12:30	0.25	47	hours	EHTR-FM
pH	1	20-NOV-19 13:45	25-NOV-19 11:00	0.25	117	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2385817 were received on 21-NOV-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **20191120Q4GW**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Elkview Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Job Description	Q4 Ground Water Sampling			Lab Contact	Lyudmyla Shvets			Email 1:	kimberley.hackett@teck.com	X	X	X
Project Manager	Cameron Griffin			Email	lyudmyla.shvets@alsglobal.com			Email 2:	cameron.griffin@teck.com	X	X	X
Email	Cameron.Griffin@Teck.com			Address	2559 29 Street NE			Email 3:	bryan.ogden@teck.com	X	X	X
Address	RR#1 HWY# 3							Email 4:	Teck.Lab.Results@sharepoint.teck.com	X	X	X
								Email 5:	teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB					
Postal Code		Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-865-5289			Phone Number	403-407-1800			PO number	VPO00610852			

SAMPLE DETAILS								ANALYSIS REQUESTED											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECK COAL-ROUTINE-VA (E305.1)	TECK COAL-MET-D-VA (SW6020)	DOC (APHA 5310)	Dissolved Phosphorus	TKN/TOC (APHA 4500-NORG)	Total Nitrogen for BC (NO2 and NO3)	T-ULTRA MERCURY (SW6020)	D-ULTRA MERCURY (SW6020)	EPH (C10-C32)	D-Mercury	T-Mercury	
EV_WF_SW_WG_2019_Q4_NP	EV_WF_SW	WG	N	11/20/2019	13:45	G	5	1	1	1		1					1		
							Total	5											

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
EV_MW_BC10C has not been preserved or filtered	Jason Gravelle	November 20, 2019	<i>JM</i>	11/21/2019

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jason Gravelle		<i>Jason Gravelle</i>	November 20, 2019





TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 22-JAN-19  
Report Date: 29-JAN-19 17:00 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2223314  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_Q1\_WG\_20190121  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-1 CM_MW7-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 21-JAN-19 @ 11:40							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.57		0.50	mg/L		25-JAN-19	R4470307
Total Kjeldahl Nitrogen	0.143		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	0.72		0.50	mg/L		25-JAN-19	R4470307
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-JAN-19	24-JAN-19	R4464934
Dissolved Mercury Filtration Location	FIELD					24-JAN-19	R4465189
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	23-JAN-19	23-JAN-19	R4465177
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-JAN-19	R4469036
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-JAN-19	23-JAN-19	R4465177
Antimony (Sb)-Dissolved	0.00026		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Barium (Ba)-Dissolved	0.0160		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Boron (B)-Dissolved	0.065		0.020	mg/L	23-JAN-19	23-JAN-19	R4465177
Cadmium (Cd)-Dissolved	0.153		0.010	ug/L	23-JAN-19	23-JAN-19	R4465177
Calcium (Ca)-Dissolved	357		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Chromium (Cr)-Dissolved	0.00073		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Cobalt (Co)-Dissolved	0.73		0.20	ug/L	23-JAN-19	23-JAN-19	R4465177
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-JAN-19	25-JAN-19	R4470687
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	23-JAN-19	23-JAN-19	R4465177
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Lithium (Li)-Dissolved	0.0544		0.0020	mg/L	23-JAN-19	23-JAN-19	R4465177
Magnesium (Mg)-Dissolved	133		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Manganese (Mn)-Dissolved	0.294		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Molybdenum (Mo)-Dissolved	0.00028		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Nickel (Ni)-Dissolved	0.0192		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
Potassium (K)-Dissolved	2.47		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Selenium (Se)-Dissolved	3.57		0.10	ug/L	23-JAN-19	23-JAN-19	R4465177
Silicon (Si)-Dissolved	2.54		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	23-JAN-19	23-JAN-19	R4465177
Sodium (Na)-Dissolved	25.4		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Strontium (Sr)-Dissolved	0.814		0.00040	mg/L	23-JAN-19	23-JAN-19	R4465177
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	23-JAN-19	23-JAN-19	R4465177
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Uranium (U)-Dissolved	0.00479		0.000020	mg/L	23-JAN-19	23-JAN-19	R4465177
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
Zinc (Zn)-Dissolved	0.0498		0.0020	mg/L	23-JAN-19	23-JAN-19	R4465177
<b>Hardness</b>							
Hardness (as CaCO3)	1440		0.50	mg/L		27-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	44.9		1.0	mg/L		24-JAN-19	R4466514
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	402		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-1 CM_MW7-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 21-JAN-19 @ 11:40							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	402		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0409		0.0050	mg/L		27-JAN-19	R4470795
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		22-JAN-19	R4462714
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		22-JAN-19	R4462714
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2050		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.12	DLHC	0.10	mg/L		22-JAN-19	R4462714
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		28-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.2			%		28-JAN-19	
Anion Sum	29.2			meq/L		28-JAN-19	
Cation Sum	30.0			meq/L		28-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.93	DLHC	0.025	mg/L		22-JAN-19	R4462714
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0617	DLHC	0.0050	mg/L		22-JAN-19	R4462714
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-19	R4461727
<b>Oxidation redution potential by elect.</b>							
ORP	376		-1000	mV		24-JAN-19	R4467107
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0095		0.0020	mg/L		25-JAN-19	R4469508
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1010	DLHC	1.5	mg/L		22-JAN-19	R4462714
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1970	DLHC	20	mg/L		25-JAN-19	R4469998
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.3		1.0	mg/L		25-JAN-19	R4468969
<b>Turbidity</b>							
Turbidity	2.98		0.10	NTU		23-JAN-19	R4464407
<b>pH</b>							
pH	7.47		0.10	pH		28-JAN-19	R4472707
L2223314-2 CM_MW7-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 21-JAN-19 @ 11:38							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.15		0.50	mg/L		25-JAN-19	R4470307
Total Kjeldahl Nitrogen	0.247		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	2.76		0.50	mg/L		25-JAN-19	R4470307
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-JAN-19	24-JAN-19	R4464934
Dissolved Mercury Filtration Location	FIELD					24-JAN-19	R4465189
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-JAN-19	23-JAN-19	R4465177
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-2 CM_MW7-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 21-JAN-19 @ 11:38							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-JAN-19	23-JAN-19	R4465177
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Arsenic (As)-Dissolved	0.00109		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Barium (Ba)-Dissolved	0.0302		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Boron (B)-Dissolved	0.027		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Cadmium (Cd)-Dissolved	0.0110		0.0050	ug/L	23-JAN-19	23-JAN-19	R4465177
Calcium (Ca)-Dissolved	102		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Cobalt (Co)-Dissolved	0.64		0.10	ug/L	23-JAN-19	23-JAN-19	R4465177
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Iron (Fe)-Dissolved	1.28		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Lithium (Li)-Dissolved	0.0063		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
Magnesium (Mg)-Dissolved	33.2		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Manganese (Mn)-Dissolved	0.152		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Molybdenum (Mo)-Dissolved	0.00166		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Nickel (Ni)-Dissolved	0.00133		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Potassium (K)-Dissolved	1.55		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	23-JAN-19	23-JAN-19	R4465177
Silicon (Si)-Dissolved	5.03		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Sodium (Na)-Dissolved	19.5		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Strontium (Sr)-Dissolved	0.403		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Uranium (U)-Dissolved	0.00122		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Zinc (Zn)-Dissolved	0.0105		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
<b>Hardness</b>							
Hardness (as CaCO3)	391		0.50	mg/L		24-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	13.9		1.0	mg/L		24-JAN-19	R4466514
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	281		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	281		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0964		0.0050	mg/L		27-JAN-19	R4470795
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		22-JAN-19	R4462714
<b>Chloride in Water by IC</b>							
Chloride (Cl)	12.5	DLHC	2.5	mg/L		22-JAN-19	R4462714
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	745		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.26	DLHC	0.10	mg/L		22-JAN-19	R4462714
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-2 CM_MW7-SH_WG_2019-01-14_N Sampled By: SH/DS on 21-JAN-19 @ 11:38 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	96.0		-100	%		28-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.1			%		28-JAN-19	
Anion Sum	9.16			meq/L		28-JAN-19	
Cation Sum	8.79			meq/L		28-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		22-JAN-19	R4462714
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		22-JAN-19	R4462714
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0025		0.0010	mg/L		22-JAN-19	R4461727
<b>Oxidation redution potential by elect.</b>							
ORP	283		-1000	mV		24-JAN-19	R4467107
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0152		0.0020	mg/L		25-JAN-19	R4469508
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	153	DLHC	1.5	mg/L		22-JAN-19	R4462714
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	528	DLHC	20	mg/L		25-JAN-19	R4469998
<b>Total Suspended Solids</b>							
Total Suspended Solids	67.7		1.0	mg/L		25-JAN-19	R4468969
<b>Turbidity</b>							
Turbidity	35.3		0.10	NTU		23-JAN-19	R4464407
<b>pH</b>							
pH	7.81		0.10	pH		28-JAN-19	R4472707
L2223314-3 CM_MW8_WG_2019-01-14_N Sampled By: SH/DS on 21-JAN-19 @ 11:18 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.01		0.50	mg/L		28-JAN-19	R4473846
Total Kjeldahl Nitrogen	0.906		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	1.19		0.50	mg/L		25-JAN-19	R4470307
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-JAN-19	24-JAN-19	R4464934
Dissolved Mercury Filtration Location	FIELD					24-JAN-19	R4465189
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-JAN-19	23-JAN-19	R4465177
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-JAN-19	R4464756
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-JAN-19	23-JAN-19	R4465177
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Arsenic (As)-Dissolved	0.00016		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Barium (Ba)-Dissolved	0.113		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Boron (B)-Dissolved	0.354		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Cadmium (Cd)-Dissolved	0.0428		0.0050	ug/L	23-JAN-19	23-JAN-19	R4465177
Calcium (Ca)-Dissolved	67.0		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Chromium (Cr)-Dissolved	0.00022		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Cobalt (Co)-Dissolved	0.47		0.10	ug/L	23-JAN-19	23-JAN-19	R4465177

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-3 CM_MW8_WG_2019-01-14_N							
Sampled By: SH/DS on 21-JAN-19 @ 11:18							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00054		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Lithium (Li)-Dissolved	0.0654		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
Magnesium (Mg)-Dissolved	17.8		0.10	mg/L	23-JAN-19	23-JAN-19	R4465177
Manganese (Mn)-Dissolved	0.188		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Molybdenum (Mo)-Dissolved	0.00111		0.000050	mg/L	23-JAN-19	23-JAN-19	R4465177
Nickel (Ni)-Dissolved	0.00105		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Potassium (K)-Dissolved	2.76		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	23-JAN-19	23-JAN-19	R4465177
Silicon (Si)-Dissolved	6.34		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Silver (Ag)-Dissolved	0.000011		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Sodium (Na)-Dissolved	49.7		0.050	mg/L	23-JAN-19	23-JAN-19	R4465177
Strontium (Sr)-Dissolved	4.94		0.00020	mg/L	23-JAN-19	23-JAN-19	R4465177
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Tin (Sn)-Dissolved	0.00036		0.00010	mg/L	23-JAN-19	23-JAN-19	R4465177
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-JAN-19	23-JAN-19	R4465177
Uranium (U)-Dissolved	0.000647		0.000010	mg/L	23-JAN-19	23-JAN-19	R4465177
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-JAN-19	23-JAN-19	R4465177
Zinc (Zn)-Dissolved	0.0418		0.0010	mg/L	23-JAN-19	23-JAN-19	R4465177
<b>Hardness</b>							
Hardness (as CaCO3)	241		0.50	mg/L		24-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	10.4		1.0	mg/L		24-JAN-19	R4466514
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	322		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	322		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.797	DLHC	0.025	mg/L		27-JAN-19	R4470795
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		22-JAN-19	R4462714
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.09		0.50	mg/L		22-JAN-19	R4462714
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	602		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.294		0.020	mg/L		22-JAN-19	R4462714
<b>Ion Balance Calculation</b>							
Ion Balance	94.5		-100	%		29-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.8			%		29-JAN-19	
Anion Sum	7.52			meq/L		29-JAN-19	
Cation Sum	7.11			meq/L		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0106		0.0050	mg/L		22-JAN-19	R4462714
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0022		0.0010	mg/L		22-JAN-19	R4462714
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-JAN-19	R4461727

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223314-3 CM_MW8_WG_2019-01-14_N Sampled By: SH/DS on 21-JAN-19 @ 11:18 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	395		-1000	mV		24-JAN-19	R4467107
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0266		0.0020	mg/L		25-JAN-19	R4469508
<b>Sulfate in Water by IC</b> Sulfate (SO4)	48.4		0.30	mg/L		22-JAN-19	R4462714
<b>Total Dissolved Solids</b> Total Dissolved Solids	381	DLHC	20	mg/L		25-JAN-19	R4469998
<b>Total Suspended Solids</b> Total Suspended Solids	6.3		1.0	mg/L		25-JAN-19	R4468969
<b>Turbidity</b> Turbidity	4.44		0.10	NTU		23-JAN-19	R4464407
<b>pH</b> pH	8.12		0.10	pH		28-JAN-19	R4472707

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			



# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_Q1\_WG\_20190121

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 1 of 12

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4466514</b>							
<b>WG2976351-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.2		%		85-115	24-JAN-19
<b>WG2976351-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			110.8		%		85-115	24-JAN-19
<b>WG2976351-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	24-JAN-19
<b>WG2976351-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	24-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472707</b>							
<b>WG2978483-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.6		%		85-115	28-JAN-19
<b>WG2978483-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465177</b>							
<b>WG2975872-3</b>	<b>DUP</b>	<b>L2223314-1</b>						
Beryllium (Be)-Dissolved		<0.000040	<0.000040	RPD-NA	mg/L	N/A	20	23-JAN-19
<b>WG2975872-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			91.1		%		80-120	23-JAN-19
<b>WG2975872-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-JAN-19
<b>WG2975872-4</b>	<b>MS</b>	<b>L2223314-2</b>						
Beryllium (Be)-Dissolved			96.1		%		70-130	23-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4462714</b>							
<b>WG2975361-10</b>	<b>LCS</b>							
Bromide (Br)			100.4		%		85-115	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470307</b>							
<b>WG2977686-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			83.7		%		80-120	25-JAN-19
<b>WG2977686-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-JAN-19



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4473846</b>							
<b>WG2978810-3</b>	<b>DUP</b>	<b>L2223314-3</b>						
Dissolved Organic Carbon		1.01	1.04		mg/L	2.7	20	28-JAN-19
<b>WG2978810-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.9		%		80-120	28-JAN-19
<b>WG2978810-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
<b>WG2978810-4</b>	<b>MS</b>	<b>L2223314-3</b>						
Dissolved Organic Carbon			107.9		%		70-130	28-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470307</b>							
<b>WG2977686-2</b>	<b>LCS</b>							
Total Organic Carbon			84.7		%		80-120	25-JAN-19
<b>WG2977686-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-JAN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4462714</b>							
<b>WG2975361-10</b>	<b>LCS</b>							
Chloride (Cl)			98.6		%		90-110	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-JAN-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472707</b>							
<b>WG2978483-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.4		%		90-110	28-JAN-19
<b>WG2978483-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4462714</b>							
<b>WG2975361-10</b>	<b>LCS</b>							
Fluoride (F)			102.2		%		90-110	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-JAN-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4464934</b>							
<b>WG2976104-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.8		%		80-120	24-JAN-19
<b>WG2976104-5</b>	<b>MB</b>	<b>NP</b>						



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4464934</b>							
<b>WG2976104-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	24-JAN-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465177</b>							
<b>WG2975872-3</b>	<b>DUP</b>	<b>L2223314-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	23-JAN-19
Antimony (Sb)-Dissolved		0.00026	0.00027		mg/L	1.6	20	23-JAN-19
Arsenic (As)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-JAN-19
Barium (Ba)-Dissolved		0.0160	0.0148		mg/L	8.0	20	23-JAN-19
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-19
Boron (B)-Dissolved		0.065	0.065		mg/L	0.3	20	23-JAN-19
Cadmium (Cd)-Dissolved		0.000153	0.000136		mg/L	12	20	23-JAN-19
Calcium (Ca)-Dissolved		357	344		mg/L	3.6	20	23-JAN-19
Chromium (Cr)-Dissolved		0.00073	0.00071		mg/L	2.9	20	23-JAN-19
Cobalt (Co)-Dissolved		0.00073	0.00071		mg/L	3.6	20	23-JAN-19
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	23-JAN-19
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-JAN-19
Lithium (Li)-Dissolved		0.0544	0.0564		mg/L	3.5	20	23-JAN-19
Magnesium (Mg)-Dissolved		133	122		mg/L	8.9	20	23-JAN-19
Manganese (Mn)-Dissolved		0.294	0.277		mg/L	5.8	20	23-JAN-19
Molybdenum (Mo)-Dissolved		0.00028	0.00026		mg/L	7.5	20	23-JAN-19
Nickel (Ni)-Dissolved		0.0192	0.0190		mg/L	1.1	20	23-JAN-19
Potassium (K)-Dissolved		2.47	2.29		mg/L	7.5	20	23-JAN-19
Selenium (Se)-Dissolved		0.00357	0.00356		mg/L	0.4	20	23-JAN-19
Silicon (Si)-Dissolved		2.54	2.41		mg/L	5.4	20	23-JAN-19
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-JAN-19
Sodium (Na)-Dissolved		25.4	22.8		mg/L	11	20	23-JAN-19
Strontium (Sr)-Dissolved		0.814	0.817		mg/L	0.3	20	23-JAN-19
Thallium (Tl)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	23-JAN-19
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-JAN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-JAN-19
Uranium (U)-Dissolved		0.00479	0.00475		mg/L	0.9	20	23-JAN-19
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-JAN-19
Zinc (Zn)-Dissolved		0.0498	0.0482		mg/L	3.4	20	23-JAN-19
<b>WG2975872-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465177</b>							
<b>WG2975872-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.4		%		80-120	23-JAN-19
Antimony (Sb)-Dissolved			93.7		%		80-120	23-JAN-19
Arsenic (As)-Dissolved			93.4		%		80-120	23-JAN-19
Barium (Ba)-Dissolved			93.1		%		80-120	23-JAN-19
Bismuth (Bi)-Dissolved			93.1		%		80-120	23-JAN-19
Boron (B)-Dissolved			93.9		%		80-120	23-JAN-19
Cadmium (Cd)-Dissolved			91.8		%		80-120	23-JAN-19
Calcium (Ca)-Dissolved			92.1		%		80-120	23-JAN-19
Chromium (Cr)-Dissolved			93.5		%		80-120	23-JAN-19
Cobalt (Co)-Dissolved			92.0		%		80-120	23-JAN-19
Copper (Cu)-Dissolved			90.4		%		80-120	23-JAN-19
Iron (Fe)-Dissolved			90.8		%		80-120	23-JAN-19
Lead (Pb)-Dissolved			93.3		%		80-120	23-JAN-19
Lithium (Li)-Dissolved			90.5		%		80-120	23-JAN-19
Magnesium (Mg)-Dissolved			92.9		%		80-120	23-JAN-19
Manganese (Mn)-Dissolved			93.6		%		80-120	23-JAN-19
Molybdenum (Mo)-Dissolved			95.8		%		80-120	23-JAN-19
Nickel (Ni)-Dissolved			92.3		%		80-120	23-JAN-19
Potassium (K)-Dissolved			91.1		%		80-120	23-JAN-19
Selenium (Se)-Dissolved			96.7		%		80-120	23-JAN-19
Silicon (Si)-Dissolved			102.5		%		60-140	23-JAN-19
Silver (Ag)-Dissolved			93.7		%		80-120	23-JAN-19
Sodium (Na)-Dissolved			92.6		%		80-120	23-JAN-19
Strontium (Sr)-Dissolved			90.0		%		80-120	23-JAN-19
Thallium (Tl)-Dissolved			91.0		%		80-120	23-JAN-19
Tin (Sn)-Dissolved			95.1		%		80-120	23-JAN-19
Titanium (Ti)-Dissolved			92.4		%		80-120	23-JAN-19
Uranium (U)-Dissolved			96.2		%		80-120	23-JAN-19
Vanadium (V)-Dissolved			92.9		%		80-120	23-JAN-19
Zinc (Zn)-Dissolved			96.8		%		80-120	23-JAN-19
<b>WG2975872-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465177</b>							
<b>WG2975872-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-JAN-19
<b>WG2975872-4</b>	<b>MS</b>	<b>L2223314-2</b>						
Aluminum (Al)-Dissolved			89.9		%		70-130	23-JAN-19
Antimony (Sb)-Dissolved			97.0		%		70-130	23-JAN-19
Arsenic (As)-Dissolved			102.1		%		70-130	23-JAN-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Bismuth (Bi)-Dissolved			83.4		%		70-130	23-JAN-19
Boron (B)-Dissolved			105.3		%		70-130	23-JAN-19



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4465177</b>							
<b>WG2975872-4</b>	<b>MS</b>	<b>L2223314-2</b>						
Cadmium (Cd)-Dissolved			94.0		%		70-130	23-JAN-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Chromium (Cr)-Dissolved			94.4		%		70-130	23-JAN-19
Cobalt (Co)-Dissolved			91.0		%		70-130	23-JAN-19
Copper (Cu)-Dissolved			88.4		%		70-130	23-JAN-19
Iron (Fe)-Dissolved			86.7		%		70-130	23-JAN-19
Lead (Pb)-Dissolved			89.3		%		70-130	23-JAN-19
Lithium (Li)-Dissolved			96.6		%		70-130	23-JAN-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Molybdenum (Mo)-Dissolved			97.1		%		70-130	23-JAN-19
Nickel (Ni)-Dissolved			89.2		%		70-130	23-JAN-19
Potassium (K)-Dissolved			91.4		%		70-130	23-JAN-19
Selenium (Se)-Dissolved			111.0		%		70-130	23-JAN-19
Silicon (Si)-Dissolved			92.3		%		70-130	23-JAN-19
Silver (Ag)-Dissolved			89.6		%		70-130	23-JAN-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-JAN-19
Thallium (Tl)-Dissolved			87.9		%		70-130	23-JAN-19
Tin (Sn)-Dissolved			99.4		%		70-130	23-JAN-19
Titanium (Ti)-Dissolved			94.5		%		70-130	23-JAN-19
Uranium (U)-Dissolved			92.4		%		70-130	23-JAN-19
Vanadium (V)-Dissolved			95.9		%		70-130	23-JAN-19
Zinc (Zn)-Dissolved			94.1		%		70-130	23-JAN-19
<b>Batch</b>	<b>R4470687</b>							
<b>WG2977211-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.2		%		80-120	25-JAN-19
Antimony (Sb)-Dissolved			98.4		%		80-120	25-JAN-19
Arsenic (As)-Dissolved			97.0		%		80-120	25-JAN-19
Barium (Ba)-Dissolved			100.6		%		80-120	25-JAN-19
Bismuth (Bi)-Dissolved			108.4		%		80-120	25-JAN-19
Boron (B)-Dissolved			91.5		%		80-120	25-JAN-19
Cadmium (Cd)-Dissolved			94.9		%		80-120	25-JAN-19
Calcium (Ca)-Dissolved			92.4		%		80-120	25-JAN-19





## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470687</b>							
<b>WG2977211-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			101.9		%		80-120	25-JAN-19
Cobalt (Co)-Dissolved			97.8		%		80-120	25-JAN-19
Copper (Cu)-Dissolved			96.8		%		80-120	25-JAN-19
Iron (Fe)-Dissolved			90.9		%		80-120	25-JAN-19
Lead (Pb)-Dissolved			107.2		%		80-120	25-JAN-19
Lithium (Li)-Dissolved			91.4		%		80-120	25-JAN-19
Magnesium (Mg)-Dissolved			98.9		%		80-120	25-JAN-19
Manganese (Mn)-Dissolved			99.4		%		80-120	25-JAN-19
Molybdenum (Mo)-Dissolved			100.1		%		80-120	25-JAN-19
Nickel (Ni)-Dissolved			96.6		%		80-120	25-JAN-19
Potassium (K)-Dissolved			100.2		%		80-120	25-JAN-19
Selenium (Se)-Dissolved			94.5		%		80-120	25-JAN-19
Silicon (Si)-Dissolved			97.6		%		60-140	25-JAN-19
Silver (Ag)-Dissolved			95.4		%		80-120	25-JAN-19
Sodium (Na)-Dissolved			101.2		%		80-120	25-JAN-19
Strontium (Sr)-Dissolved			102.0		%		80-120	25-JAN-19
Thallium (Tl)-Dissolved			99.2		%		80-120	25-JAN-19
Tin (Sn)-Dissolved			97.9		%		80-120	25-JAN-19
Titanium (Ti)-Dissolved			96.5		%		80-120	25-JAN-19
Uranium (U)-Dissolved			107.9		%		80-120	25-JAN-19
Vanadium (V)-Dissolved			99.5		%		80-120	25-JAN-19
Zinc (Zn)-Dissolved			92.3		%		80-120	25-JAN-19
<b>WG2977211-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-JAN-19



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470687</b>							
<b>WG2977211-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-JAN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4470795</b>							
<b>WG2977850-6</b>	<b>LCS</b>							
Ammonia as N			99.8		%		85-115	27-JAN-19
<b>WG2977850-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-JAN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4462714</b>							
<b>WG2975361-10</b>	<b>LCS</b>							
Nitrite (as N)			103.5		%		90-110	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-JAN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4462714							
<b>WG2975361-10</b>	<b>LCS</b>							
Nitrate (as N)			99.0		%		90-110	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4467107							
<b>WG2976583-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	24-JAN-19
<b>WG2976583-6</b>	<b>DUP</b>	<b>L2223314-2</b>						
ORP		283	282	J	mV	0.5	15	24-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4469508							
<b>WG2977365-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			97.5		%		80-120	25-JAN-19
<b>WG2977365-21</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-JAN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4472707							
<b>WG2978483-2</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	28-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4461727							
<b>WG2974953-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			105.4		%		80-120	22-JAN-19
<b>WG2974953-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4462714							
<b>WG2975361-10</b>	<b>LCS</b>							
Sulfate (SO4)			98.8		%		90-110	22-JAN-19
<b>WG2975361-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4469998</b>							
<b>WG2977124-5</b>	<b>LCS</b>							
Total Dissolved Solids			106.7		%		85-115	25-JAN-19
<b>WG2977124-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	25-JAN-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472307</b>							
<b>WG2977134-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.5		%		75-125	28-JAN-19
<b>WG2977134-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.2		%		75-125	28-JAN-19
<b>WG2977134-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>WG2977134-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4468969</b>							
<b>WG2976869-4</b>	<b>LCS</b>							
Total Suspended Solids			93.4		%		85-115	25-JAN-19
<b>WG2976869-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	25-JAN-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4464407</b>							
<b>WG2975757-3</b>	<b>DUP</b>	<b>L2223314-2</b>						
Turbidity		35.3	35.5		NTU	0.6	15	23-JAN-19
<b>WG2975757-2</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	23-JAN-19
<b>WG2975757-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-JAN-19

# Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2223314

Report Date: 29-JAN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	21-JAN-19 11:40	24-JAN-19 17:00	0.25	77	hours	EHTR-FM
	2	21-JAN-19 11:38	24-JAN-19 17:00	0.25	77	hours	EHTR-FM
	3	21-JAN-19 11:18	24-JAN-19 17:00	0.25	78	hours	EHTR-FM
pH	1	21-JAN-19 11:40	28-JAN-19 12:00	0.25	168	hours	EHTR-FM
	2	21-JAN-19 11:38	28-JAN-19 12:00	0.25	168	hours	EHTR-FM
	3	21-JAN-19 11:18	28-JAN-19 12:00	0.25	169	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2223314 were received on 22-JAN-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> COC_Q1_WG_20190121		<b>TURNAROUND TIME:</b> Regular			<b>RUSII:</b> No				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Project Manager Jay Jones		Lab Contact Lyudmyla Shvets		Email 1: Scott.Holmgren@teck.co		X	X	X	
Email Jay.Jones@teck.com		Email Lyudmyla.Shvets@alsglobal.com		Email 2: teckcoal@equlsonline.co				X	
Address PO Box 3000		Address 2559 29th St. NE		Email 3: Don.Sacino@teck.com		X	X	X	
City Sparwood Province BC		City Calgary Province AB		Email 4: Jay.Jones@teck.com		X	X	X	
Postal Code V0B 2G0 Country Canada		Postal Code T1Y 7B5 Country Canada		PO number				61069	
Phone Number 1-250-425-7321		Phone Number 403 407 1800							

**SAMPLE DETAILS** Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2223314-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N						
CM_MW7-DP_WG_2019-01-14_N	CM_MW7-DP	WG	No	1/21/2019	11:40	G	5	I	I	I	I	I	I	I	I	I	I						
CM_MW7-SH_WG_2019-01-14_N	CM_MW7-SH	WG	No	1/21/2019	11:38	G	5	I	I	I	I	I	I	I	I	I	I						
CM_MW8_WG_2019-01-14_N	CM_MW8	WG	No	1/21/2019	11:18	G	5	I	I	I	I	I	I	I	I	I	I						
[REDACTED]																							

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>			<b>ACCEPTED BY/AFFILIATION</b>			<b>DATE/TIME</b>		
									 9:40 1/22					
<b>SERVICE REQUEST (rush - subject to availability)</b>			<b>Sampler's Name</b>			<b>SH/DS</b>			<b>Mobile #</b>			<b>250 425 7518</b>		
Regular (default) X			 62									<b>January 21, 2019</b>		
Priority (2-3 business days) - 50% surcharge														
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS			<b>Sampler's Signature</b>						<b>Date/Time</b>					



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 23-JAN-19  
Report Date: 30-JAN-19 10:06 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2223623  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_Q1\_WG\_20190122  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-1 CM_MW1-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 22-JAN-19 @ 11:24							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.91		0.50	mg/L		25-JAN-19	R4470307
Total Kjeldahl Nitrogen	0.672		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	1.78		0.50	mg/L		25-JAN-19	R4470307
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	26-JAN-19	26-JAN-19	R4472967
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-JAN-19	29-JAN-19	R4474867
Dissolved Mercury Filtration Location	FIELD					27-JAN-19	R4471319
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
Aluminum (Al)-Dissolved	0.0040		0.0030	mg/L	26-JAN-19	26-JAN-19	R4472967
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Arsenic (As)-Dissolved	0.00172		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Barium (Ba)-Dissolved	10.7		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Boron (B)-Dissolved	0.233		0.020	mg/L	26-JAN-19	26-JAN-19	R4472967
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	26-JAN-19	26-JAN-19	R4472967
Calcium (Ca)-Dissolved	28.8		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Cobalt (Co)-Dissolved	0.59		0.20	ug/L	26-JAN-19	26-JAN-19	R4472967
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Iron (Fe)-Dissolved	0.516		0.020	mg/L	26-JAN-19	26-JAN-19	R4472967
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Lithium (Li)-Dissolved	0.671		0.0020	mg/L	26-JAN-19	26-JAN-19	R4472967
Magnesium (Mg)-Dissolved	17.1		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Manganese (Mn)-Dissolved	0.125		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Molybdenum (Mo)-Dissolved	0.00358		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Potassium (K)-Dissolved	4.96		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	26-JAN-19	26-JAN-19	R4472967
Silicon (Si)-Dissolved	4.42		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	26-JAN-19	28-JAN-19	R4472895
Sodium (Na)-Dissolved	220		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Strontium (Sr)-Dissolved	2.34		0.00040	mg/L	26-JAN-19	26-JAN-19	R4472967
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	26-JAN-19	26-JAN-19	R4472967
Tin (Sn)-Dissolved	0.00023		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Uranium (U)-Dissolved	0.000611		0.000020	mg/L	26-JAN-19	26-JAN-19	R4472967
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Zinc (Zn)-Dissolved	0.0059		0.0020	mg/L	26-JAN-19	26-JAN-19	R4472967
<b>Hardness</b>							
Hardness (as CaCO3)	142		0.50	mg/L		29-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.2		1.0	mg/L		28-JAN-19	R4471691
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	342		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	2.8		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-1 CM_MW1-DP_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 11:24 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	344		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.562	DLHC	0.010	mg/L		28-JAN-19	R4472927
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.81	DLHC	0.25	mg/L		23-JAN-19	R4465431
<b>Chloride in Water by IC</b>							
Chloride (Cl)	207	DLHC	2.5	mg/L		23-JAN-19	R4465431
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1260		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.22	DLHC	0.10	mg/L		23-JAN-19	R4465431
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.6			%		29-JAN-19	
Anion Sum	12.8			meq/L		29-JAN-19	
Cation Sum	12.6			meq/L		29-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.8		-100	%		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		23-JAN-19	R4465431
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-JAN-19	R4465431
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0041		0.0010	mg/L		24-JAN-19	R4467047
<b>Oxidation reduction potential by elect.</b>							
ORP	405		-1000	mV		25-JAN-19	R4469488
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0799		0.0020	mg/L		28-JAN-19	R4472509
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	2.0	DLHC	1.5	mg/L		23-JAN-19	R4465431
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	715	DLHC	20	mg/L		28-JAN-19	R4474975
<b>Total Suspended Solids</b>							
Total Suspended Solids	14.5		1.0	mg/L		28-JAN-19	R4474974
<b>Turbidity</b>							
Turbidity	14.3		0.10	NTU		23-JAN-19	R4464407
<b>pH</b>							
pH	8.30		0.10	pH		28-JAN-19	R4472707
L2223623-2 CM_MW1-OB_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 12:27 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.93		0.50	mg/L		28-JAN-19	R4473846
Total Kjeldahl Nitrogen	0.137		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	0.83		0.50	mg/L		28-JAN-19	R4473846
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-JAN-19	26-JAN-19	R4472967
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-JAN-19	29-JAN-19	R4474867
Dissolved Mercury Filtration Location	FIELD					27-JAN-19	R4471319
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-2 CM_MW1-OB_WG_2019-01-14_N							
Sampled By: SH/DS on 22-JAN-19 @ 12:27							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-JAN-19	26-JAN-19	R4472967
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Barium (Ba)-Dissolved	0.109		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Boron (B)-Dissolved	0.029		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cadmium (Cd)-Dissolved	0.0611		0.0050	ug/L	26-JAN-19	26-JAN-19	R4472967
Calcium (Ca)-Dissolved	169		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Chromium (Cr)-Dissolved	0.00055		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-JAN-19	26-JAN-19	R4472967
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Lead (Pb)-Dissolved	0.000124		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Lithium (Li)-Dissolved	0.0177		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Magnesium (Mg)-Dissolved	52.3		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Manganese (Mn)-Dissolved	0.00029		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Molybdenum (Mo)-Dissolved	0.000273		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Nickel (Ni)-Dissolved	0.00084		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Potassium (K)-Dissolved	1.87		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Selenium (Se)-Dissolved	4.56		0.050	ug/L	26-JAN-19	26-JAN-19	R4472967
Silicon (Si)-Dissolved	2.85		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Sodium (Na)-Dissolved	67.9		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Strontium (Sr)-Dissolved	0.438		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Thallium (Tl)-Dissolved	0.000014		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Uranium (U)-Dissolved	0.00138		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Zinc (Zn)-Dissolved	0.0149		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
<b>Hardness</b>							
Hardness (as CaCO3)	637		0.50	mg/L		28-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	19.8		1.0	mg/L		28-JAN-19	R4471691
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	264		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	264		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0141		0.0050	mg/L		28-JAN-19	R4472927
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		23-JAN-19	R4465431
<b>Chloride in Water by IC</b>							
Chloride (Cl)	154	DLHC	2.5	mg/L		23-JAN-19	R4465431
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1440		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.12	DLHC	0.10	mg/L		23-JAN-19	R4465431
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-2 CM_MW1-OB_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 12:27 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.7			%		29-JAN-19	
Anion Sum	16.0			meq/L		29-JAN-19	
Cation Sum	15.7			meq/L		29-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.5		-100	%		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.36	DLHC	0.025	mg/L		23-JAN-19	R4465431
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-JAN-19	R4465431
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0033		0.0010	mg/L		24-JAN-19	R4467047
<b>Oxidation redution potential by elect.</b>							
ORP	431		-1000	mV		25-JAN-19	R4469488
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0041		0.0020	mg/L		28-JAN-19	R4472509
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	300	DLHC	1.5	mg/L		23-JAN-19	R4465431
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	979	DLHC	20	mg/L		28-JAN-19	R4474975
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.2		1.0	mg/L		28-JAN-19	R4474974
<b>Turbidity</b>							
Turbidity	0.36		0.10	NTU		23-JAN-19	R4464407
<b>pH</b>							
pH	7.85		0.10	pH		28-JAN-19	R4472707
L2223623-3 CM_MW1-SH_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 12:44 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.24		0.50	mg/L		26-JAN-19	R4470767
Total Kjeldahl Nitrogen	0.067		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	1.26		0.50	mg/L		26-JAN-19	R4470767
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-JAN-19	26-JAN-19	R4472967
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-JAN-19	29-JAN-19	R4474867
Dissolved Mercury Filtration Location	FIELD					27-JAN-19	R4471319
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
Aluminum (Al)-Dissolved	0.0030		0.0030	mg/L	26-JAN-19	26-JAN-19	R4472967
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Arsenic (As)-Dissolved	0.00193		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Barium (Ba)-Dissolved	0.335		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Boron (B)-Dissolved	0.058		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cadmium (Cd)-Dissolved	<0.030	DLM	0.030	ug/L	26-JAN-19	26-JAN-19	R4472967
Calcium (Ca)-Dissolved	29.9		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cobalt (Co)-Dissolved	0.25		0.10	ug/L	26-JAN-19	26-JAN-19	R4472967

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-3 CM_MW1-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 22-JAN-19 @ 12:44							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Iron (Fe)-Dissolved	0.576		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Lithium (Li)-Dissolved	0.0197		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Magnesium (Mg)-Dissolved	11.4		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Manganese (Mn)-Dissolved	0.169		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Molybdenum (Mo)-Dissolved	0.0537		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Potassium (K)-Dissolved	1.22		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Selenium (Se)-Dissolved	0.078		0.050	ug/L	26-JAN-19	26-JAN-19	R4472967
Silicon (Si)-Dissolved	3.74		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Sodium (Na)-Dissolved	175		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Strontium (Sr)-Dissolved	0.292		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Uranium (U)-Dissolved	0.000910		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
<b>Hardness</b>							
Hardness (as CaCO3)	121		0.50	mg/L		28-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.7		1.0	mg/L		28-JAN-19	R4471691
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	204		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0491		0.0050	mg/L		28-JAN-19	R4472927
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.73	DLHC	0.25	mg/L		23-JAN-19	R4465431
<b>Chloride in Water by IC</b>							
Chloride (Cl)	184	DLHC	2.5	mg/L		23-JAN-19	R4465431
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	980		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.82	DLHC	0.10	mg/L		23-JAN-19	R4465431
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.7			%		29-JAN-19	
Anion Sum	9.57			meq/L		29-JAN-19	
Cation Sum	10.1			meq/L		29-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	106		-100	%		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.030	DLHC	0.025	mg/L		23-JAN-19	R4465431
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-JAN-19	R4465431
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0017		0.0010	mg/L		24-JAN-19	R4467047

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-3 CM_MW1-SH_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 12:44 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	389		-1000	mV		25-JAN-19	R4469488
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0180		0.0020	mg/L		28-JAN-19	R4472509
<b>Sulfate in Water by IC</b> Sulfate (SO4)	11.8	DLHC	1.5	mg/L		23-JAN-19	R4465431
<b>Total Dissolved Solids</b> Total Dissolved Solids	547	DLHC	20	mg/L		28-JAN-19	R4474975
<b>Total Suspended Solids</b> Total Suspended Solids	7.6		1.0	mg/L		28-JAN-19	R4474974
<b>Turbidity</b> Turbidity	14.8		0.10	NTU		23-JAN-19	R4464407
<b>pH</b> pH	8.27		0.10	pH		28-JAN-19	R4472707
L2223623-4 CM_NNP_WG_2019-01-14_N Sampled By: SH/DS on 22-JAN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.15		0.50	mg/L		26-JAN-19	R4470767
Total Kjeldahl Nitrogen	0.062		0.050	mg/L		28-JAN-19	R4472307
Total Organic Carbon	1.13		0.50	mg/L		26-JAN-19	R4470767
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-JAN-19	26-JAN-19	R4472967
Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	27-JAN-19	29-JAN-19	R4474867
Dissolved Mercury Filtration Location	FIELD					27-JAN-19	R4471319
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					26-JAN-19	R4469880
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-JAN-19	26-JAN-19	R4472967
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Arsenic (As)-Dissolved	0.00183		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Barium (Ba)-Dissolved	0.319		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Boron (B)-Dissolved	0.056		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cadmium (Cd)-Dissolved	<0.030	DLM	0.030	ug/L	26-JAN-19	26-JAN-19	R4472967
Calcium (Ca)-Dissolved	28.6		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Cobalt (Co)-Dissolved	0.25		0.10	ug/L	26-JAN-19	26-JAN-19	R4472967
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Iron (Fe)-Dissolved	0.544		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Lithium (Li)-Dissolved	0.0187		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
Magnesium (Mg)-Dissolved	11.1		0.10	mg/L	26-JAN-19	26-JAN-19	R4472967
Manganese (Mn)-Dissolved	0.162		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Molybdenum (Mo)-Dissolved	0.0545		0.000050	mg/L	26-JAN-19	26-JAN-19	R4472967
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Potassium (K)-Dissolved	1.16		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Selenium (Se)-Dissolved	0.085		0.050	ug/L	26-JAN-19	26-JAN-19	R4472967
Silicon (Si)-Dissolved	3.67		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-4 CM_NNP_WG_2019-01-14_N							
Sampled By: SH/DS on 22-JAN-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	168		0.050	mg/L	26-JAN-19	26-JAN-19	R4472967
Strontium (Sr)-Dissolved	0.291		0.00020	mg/L	26-JAN-19	26-JAN-19	R4472967
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-JAN-19	26-JAN-19	R4472967
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-JAN-19	26-JAN-19	R4472967
Uranium (U)-Dissolved	0.000873		0.000010	mg/L	26-JAN-19	26-JAN-19	R4472967
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-JAN-19	26-JAN-19	R4472967
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-JAN-19	26-JAN-19	R4472967
<b>Hardness</b>							
Hardness (as CaCO3)	117		0.50	mg/L		28-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.5		1.0	mg/L		28-JAN-19	R4471691
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	204		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0573		0.0050	mg/L		28-JAN-19	R4472927
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.76	DLHC	0.25	mg/L		23-JAN-19	R4465431
<b>Chloride in Water by IC</b>							
Chloride (Cl)	185	DLHC	2.5	mg/L		23-JAN-19	R4465431
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	992		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.80	DLHC	0.10	mg/L		23-JAN-19	R4465431
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.7			%		29-JAN-19	
Anion Sum	9.58			meq/L		29-JAN-19	
Cation Sum	9.72			meq/L		29-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		23-JAN-19	R4465431
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-JAN-19	R4465431
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0016		0.0010	mg/L		24-JAN-19	R4467047
<b>Oxidation redution potential by elect.</b>							
ORP	268		-1000	mV		25-JAN-19	R4469488
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0231		0.0020	mg/L		28-JAN-19	R4472509
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	11.8	DLHC	1.5	mg/L		23-JAN-19	R4465431
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	548	DLHC	20	mg/L		28-JAN-19	R4474975
<b>Total Suspended Solids</b>							
Total Suspended Solids	10.6		1.0	mg/L		28-JAN-19	R4474974
<b>Turbidity</b>							
Turbidity	17.8		0.10	NTU		23-JAN-19	R4464407

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-4    CM_NNP_WG_2019-01-14_N Sampled By:   SH/DS on 22-JAN-19 @ 12:00 Matrix:        WG <b>pH</b> pH	8.29		0.10	pH		28-JAN-19	R4472707
L2223623-5    CM_NNT_WG_2019-01-14_N Sampled By:   SH/DS on 22-JAN-19 @ 12:00 Matrix:        WG <b>Miscellaneous Parameters</b> Dissolved Organic Carbon                    <0.50 Total Kjeldahl Nitrogen                      <0.050 Total Organic Carbon                         <0.50 <b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved                    <0.020 Dissolved Metals Filtration Location        FIELD <b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved                      <0.0000050 Dissolved Mercury Filtration Location        FIELD <b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location        FIELD Dissolved Metals Filtration Location        FIELD Aluminum (Al)-Dissolved                      <0.0030 Antimony (Sb)-Dissolved                      <0.00010 Arsenic (As)-Dissolved                       <0.00010 Barium (Ba)-Dissolved                       <0.00010 Bismuth (Bi)-Dissolved                       <0.000050 Boron (B)-Dissolved                          <0.010 Cadmium (Cd)-Dissolved                      <0.0050 Calcium (Ca)-Dissolved                       <0.050 Chromium (Cr)-Dissolved                      <0.00010 Cobalt (Co)-Dissolved                        <0.10 Copper (Cu)-Dissolved                       <0.00050 Iron (Fe)-Dissolved                          <0.010 Lead (Pb)-Dissolved                          <0.000050 Lithium (Li)-Dissolved                       <0.0010 Magnesium (Mg)-Dissolved                    <0.10 Manganese (Mn)-Dissolved                    0.00012 Molybdenum (Mo)-Dissolved                  <0.000050 Nickel (Ni)-Dissolved                        <0.00050 Potassium (K)-Dissolved                      <0.050 Selenium (Se)-Dissolved                      <0.050 Silicon (Si)-Dissolved                        <0.050 Silver (Ag)-Dissolved                        <0.000010 Sodium (Na)-Dissolved                       <0.050 Strontium (Sr)-Dissolved                      <0.00020 Thallium (Tl)-Dissolved                      <0.000010 Tin (Sn)-Dissolved                            <0.00010 Titanium (Ti)-Dissolved                       <0.010 Uranium (U)-Dissolved                       <0.000010 Vanadium (V)-Dissolved                       <0.00050 Zinc (Zn)-Dissolved                          <0.0010 <b>Hardness</b> Hardness (as CaCO3)                         <0.50 <b>Routine for Teck Coal</b>		RRV					

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2223623-5 CM_NNT_WG_2019-01-14_N							
Sampled By: SH/DS on 22-JAN-19 @ 12:00							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	1.2		1.0	mg/L		28-JAN-19	R4471691
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		28-JAN-19	R4472707
Alkalinity, Total (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		28-JAN-19	R4472707
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0088		0.0050	mg/L		28-JAN-19	R4472927
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-JAN-19	R4465431
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		23-JAN-19	R4465431
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		28-JAN-19	R4472707
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		23-JAN-19	R4465431
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		29-JAN-19	
Anion Sum	<0.10			meq/L		29-JAN-19	
Cation Sum	<0.10			meq/L		29-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		29-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-JAN-19	R4465431
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-JAN-19	R4465431
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0013		0.0010	mg/L		24-JAN-19	R4467047
<b>Oxidation redution potential by elect.</b>							
ORP	476		-1000	mV		25-JAN-19	R4469488
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		28-JAN-19	R4472509
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	<0.30		0.30	mg/L		23-JAN-19	R4465431
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		28-JAN-19	R4474975
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		28-JAN-19	R4474974
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		23-JAN-19	R4464407
<b>pH</b>							
pH	5.65		0.10	pH		28-JAN-19	R4472707

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
			This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
			This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_Q1\_WG\_20190122

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch R4470767								
WG2977831-1	MB							
	Dissolved Organic Carbon		<0.50		mg/L		0.5	26-JAN-19
WG2977831-5	MB							
	Dissolved Organic Carbon		<0.50		mg/L		0.5	26-JAN-19
Batch R4473846								
WG2978810-2	LCS							
	Dissolved Organic Carbon		105.9		%		80-120	28-JAN-19
WG2978810-1	MB							
	Dissolved Organic Carbon		<0.50		mg/L		0.5	28-JAN-19
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch R4470307								
WG2977686-6	LCS							
	Total Organic Carbon		83.7		%		80-120	25-JAN-19
WG2977686-5	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	25-JAN-19
Batch R4470767								
WG2977831-2	LCS							
	Total Organic Carbon		111.6		%		80-120	26-JAN-19
WG2977831-6	LCS							
	Total Organic Carbon		112.2		%		80-120	26-JAN-19
WG2977831-1	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	26-JAN-19
WG2977831-5	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	26-JAN-19
Batch R4473846								
WG2978810-2	LCS							
	Total Organic Carbon		108.6		%		80-120	28-JAN-19
WG2978810-1	MB							
	Total Organic Carbon		<0.50		mg/L		0.5	28-JAN-19
<b>CL-IC-N-CL</b>		<b>Water</b>						
Batch R4465431								
WG2976167-2	LCS							
	Chloride (Cl)		99.96		%		90-110	23-JAN-19
WG2976167-1	MB							
	Chloride (Cl)		<0.50		mg/L		0.5	23-JAN-19
<b>EC-L-PCT-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>EC-L-PCT-CL</b>		<b>Water</b>						
Batch	R4472707							
<b>WG2978483-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.3		%		90-110	28-JAN-19
<b>WG2978483-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-JAN-19
<b>F-IC-N-CL</b>		<b>Water</b>						
Batch	R4465431							
<b>WG2976167-2</b>	<b>LCS</b>							
Fluoride (F)			105.3		%		90-110	23-JAN-19
<b>WG2976167-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-JAN-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
Batch	R4474867							
<b>WG2977853-65</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.8		%		80-120	29-JAN-19
<b>WG2977853-66</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.6		%		80-120	29-JAN-19
<b>WG2977853-67</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			105.8		%		80-120	29-JAN-19
<b>WG2977853-68</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			106.6		%		80-120	29-JAN-19
<b>WG2977853-29</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	29-JAN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
Batch	R4472967							
<b>WG2977476-3</b>	<b>DUP</b>	<b>L2223623-3</b>						
Aluminum (Al)-Dissolved		0.0030	0.0030		mg/L	0.7	20	26-JAN-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-19
Arsenic (As)-Dissolved		0.00193	0.00196		mg/L	1.7	20	26-JAN-19
Barium (Ba)-Dissolved		0.335	0.332		mg/L	1.0	20	26-JAN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-JAN-19
Boron (B)-Dissolved		0.058	0.054		mg/L	6.7	20	26-JAN-19
Cadmium (Cd)-Dissolved		<0.000030	<0.000030	RPD-NA	mg/L	N/A	20	26-JAN-19
Calcium (Ca)-Dissolved		29.9	28.1		mg/L	6.1	20	26-JAN-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-19
Cobalt (Co)-Dissolved		0.00025	0.00025		mg/L	1.4	20	26-JAN-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-JAN-19
Iron (Fe)-Dissolved		0.576	0.482		mg/L	18	20	26-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-3</b>	<b>DUP</b>	<b>L2223623-3</b>						
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-JAN-19
Lithium (Li)-Dissolved		0.0197	0.0182		mg/L	7.8	20	26-JAN-19
Magnesium (Mg)-Dissolved		11.4	11.6		mg/L	2.3	20	26-JAN-19
Manganese (Mn)-Dissolved		0.169	0.170		mg/L	0.5	20	26-JAN-19
Molybdenum (Mo)-Dissolved		0.0537	0.0544		mg/L	1.3	20	26-JAN-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-JAN-19
Potassium (K)-Dissolved		1.22	1.21		mg/L	0.7	20	26-JAN-19
Selenium (Se)-Dissolved		0.000078	0.000114	J	mg/L	0.000036	0.0001	26-JAN-19
Silicon (Si)-Dissolved		3.74	3.19		mg/L	16	20	26-JAN-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-JAN-19
Sodium (Na)-Dissolved		175	176		mg/L	0.5	20	26-JAN-19
Strontium (Sr)-Dissolved		0.292	0.295		mg/L	1.1	20	26-JAN-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-JAN-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-JAN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-JAN-19
Uranium (U)-Dissolved		0.000910	0.000908		mg/L	0.2	20	26-JAN-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-JAN-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-JAN-19
<b>WG2977476-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.1		%		80-120	26-JAN-19
Antimony (Sb)-Dissolved			99.5		%		80-120	26-JAN-19
Arsenic (As)-Dissolved			101.9		%		80-120	26-JAN-19
Barium (Ba)-Dissolved			98.6		%		80-120	26-JAN-19
Bismuth (Bi)-Dissolved			96.1		%		80-120	26-JAN-19
Boron (B)-Dissolved			96.0		%		80-120	26-JAN-19
Cadmium (Cd)-Dissolved			101.2		%		80-120	26-JAN-19
Calcium (Ca)-Dissolved			97.4		%		80-120	26-JAN-19
Chromium (Cr)-Dissolved			99.7		%		80-120	26-JAN-19
Cobalt (Co)-Dissolved			98.9		%		80-120	26-JAN-19
Copper (Cu)-Dissolved			99.8		%		80-120	26-JAN-19
Iron (Fe)-Dissolved			98.1		%		80-120	26-JAN-19
Lead (Pb)-Dissolved			97.2		%		80-120	26-JAN-19
Lithium (Li)-Dissolved			95.6		%		80-120	26-JAN-19
Magnesium (Mg)-Dissolved			104.5		%		80-120	26-JAN-19





## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			99.9		%		80-120	26-JAN-19
Molybdenum (Mo)-Dissolved			99.9		%		80-120	26-JAN-19
Nickel (Ni)-Dissolved			99.8		%		80-120	26-JAN-19
Potassium (K)-Dissolved			102.2		%		80-120	26-JAN-19
Selenium (Se)-Dissolved			96.6		%		80-120	26-JAN-19
Silicon (Si)-Dissolved			97.5		%		60-140	26-JAN-19
Silver (Ag)-Dissolved			94.4		%		80-120	26-JAN-19
Sodium (Na)-Dissolved			99.5		%		80-120	26-JAN-19
Strontium (Sr)-Dissolved			96.2		%		80-120	26-JAN-19
Thallium (Tl)-Dissolved			94.7		%		80-120	26-JAN-19
Tin (Sn)-Dissolved			98.1		%		80-120	26-JAN-19
Titanium (Ti)-Dissolved			101.2		%		80-120	26-JAN-19
Uranium (U)-Dissolved			99.1		%		80-120	26-JAN-19
Vanadium (V)-Dissolved			102.7		%		80-120	26-JAN-19
Zinc (Zn)-Dissolved			104.4		%		80-120	26-JAN-19
<b>WG2977476-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-1</b>	<b>MB</b>	<b>NP</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-JAN-19
<b>WG2977476-4</b>	<b>MS</b>	<b>L2223623-2</b>						
Aluminum (Al)-Dissolved			99.3		%		70-130	26-JAN-19
Antimony (Sb)-Dissolved			103.2		%		70-130	26-JAN-19
Arsenic (As)-Dissolved			104.0		%		70-130	26-JAN-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	26-JAN-19
Bismuth (Bi)-Dissolved			85.6		%		70-130	26-JAN-19
Boron (B)-Dissolved			93.0		%		70-130	26-JAN-19
Cadmium (Cd)-Dissolved			98.8		%		70-130	26-JAN-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	26-JAN-19
Chromium (Cr)-Dissolved			98.3		%		70-130	26-JAN-19
Cobalt (Co)-Dissolved			93.9		%		70-130	26-JAN-19
Copper (Cu)-Dissolved			90.4		%		70-130	26-JAN-19
Iron (Fe)-Dissolved			96.4		%		70-130	26-JAN-19
Lead (Pb)-Dissolved			92.5		%		70-130	26-JAN-19
Lithium (Li)-Dissolved			91.3		%		70-130	26-JAN-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	26-JAN-19
Manganese (Mn)-Dissolved			98.3		%		70-130	26-JAN-19
Molybdenum (Mo)-Dissolved			102.9		%		70-130	26-JAN-19
Nickel (Ni)-Dissolved			91.0		%		70-130	26-JAN-19
Potassium (K)-Dissolved			100.2		%		70-130	26-JAN-19
Selenium (Se)-Dissolved			102.6		%		70-130	26-JAN-19
Silicon (Si)-Dissolved			93.1		%		70-130	26-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4472967</b>							
<b>WG2977476-4</b>	<b>MS</b>	<b>L2223623-2</b>						
Silver (Ag)-Dissolved			95.1		%		70-130	26-JAN-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	26-JAN-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	26-JAN-19
Thallium (Tl)-Dissolved			91.1		%		70-130	26-JAN-19
Tin (Sn)-Dissolved			100.7		%		70-130	26-JAN-19
Titanium (Ti)-Dissolved			106.1		%		70-130	26-JAN-19
Uranium (U)-Dissolved			100.7		%		70-130	26-JAN-19
Vanadium (V)-Dissolved			101.5		%		70-130	26-JAN-19
Zinc (Zn)-Dissolved			94.1		%		70-130	26-JAN-19
<b>Batch</b>	<b>R4473787</b>							
<b>WG2978626-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.9		%		80-120	29-JAN-19
Antimony (Sb)-Dissolved			100.9		%		80-120	29-JAN-19
Arsenic (As)-Dissolved			96.3		%		80-120	29-JAN-19
Barium (Ba)-Dissolved			97.9		%		80-120	29-JAN-19
Bismuth (Bi)-Dissolved			100.1		%		80-120	29-JAN-19
Boron (B)-Dissolved			89.2		%		80-120	29-JAN-19
Cadmium (Cd)-Dissolved			97.5		%		80-120	29-JAN-19
Calcium (Ca)-Dissolved			95.9		%		80-120	29-JAN-19
Chromium (Cr)-Dissolved			98.5		%		80-120	29-JAN-19
Cobalt (Co)-Dissolved			97.4		%		80-120	29-JAN-19
Copper (Cu)-Dissolved			97.6		%		80-120	29-JAN-19
Iron (Fe)-Dissolved			94.0		%		80-120	29-JAN-19
Lead (Pb)-Dissolved			97.9		%		80-120	29-JAN-19
Lithium (Li)-Dissolved			92.6		%		80-120	29-JAN-19
Magnesium (Mg)-Dissolved			96.5		%		80-120	29-JAN-19
Manganese (Mn)-Dissolved			102.3		%		80-120	29-JAN-19
Molybdenum (Mo)-Dissolved			103.5		%		80-120	29-JAN-19
Nickel (Ni)-Dissolved			97.1		%		80-120	29-JAN-19
Potassium (K)-Dissolved			98.6		%		80-120	29-JAN-19
Selenium (Se)-Dissolved			97.5		%		80-120	29-JAN-19
Silicon (Si)-Dissolved			98.3		%		60-140	29-JAN-19
Silver (Ag)-Dissolved			96.9		%		80-120	29-JAN-19
Sodium (Na)-Dissolved			103.3		%		80-120	29-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4473787</b>							
<b>WG2978626-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			99.6		%		80-120	29-JAN-19
Thallium (Tl)-Dissolved			99.6		%		80-120	29-JAN-19
Tin (Sn)-Dissolved			98.4		%		80-120	29-JAN-19
Titanium (Ti)-Dissolved			97.6		%		80-120	29-JAN-19
Uranium (U)-Dissolved			96.5		%		80-120	29-JAN-19
Vanadium (V)-Dissolved			100.0		%		80-120	29-JAN-19
Zinc (Zn)-Dissolved			95.4		%		80-120	29-JAN-19
<b>WG2978626-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch R4473787</b>								
<b>WG2978626-1 MB</b>								
		<b>NP</b>						
			<0.00030		mg/L		0.0003	29-JAN-19
			<0.000010		mg/L		0.00001	29-JAN-19
			<0.00050		mg/L		0.0005	29-JAN-19
			0.0016	MB-LOR	mg/L		0.001	29-JAN-19
<b>NH3-L-F-CL</b>								
<b>Water</b>								
<b>Batch R4472927</b>								
<b>WG2978471-6 LCS</b>								
			105.3		%		85-115	28-JAN-19
<b>WG2978471-5 MB</b>								
			<0.0050		mg/L		0.005	28-JAN-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4465431</b>								
<b>WG2976167-2 LCS</b>								
			105.0		%		90-110	23-JAN-19
<b>WG2976167-1 MB</b>								
			<0.0010		mg/L		0.001	23-JAN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch R4465431</b>								
<b>WG2976167-2 LCS</b>								
			99.8		%		90-110	23-JAN-19
<b>WG2976167-1 MB</b>								
			<0.0050		mg/L		0.005	23-JAN-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch R4469488</b>								
<b>WG2977356-7 CRM</b>								
		<b>CL-ORP</b>	225		mV		210-230	25-JAN-19
<b>ORP</b>								
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch R4472509</b>								
<b>WG2978425-10 LCS</b>								
			99.2		%		80-120	28-JAN-19
<b>WG2978425-9 MB</b>								
			<0.0020		mg/L		0.002	28-JAN-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4472707							
<b>WG2978483-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4467047							
<b>WG2976256-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	24-JAN-19
<b>WG2976256-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4465431							
<b>WG2976167-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.1		%		90-110	23-JAN-19
<b>WG2976167-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4474975							
<b>WG2978410-2</b>	<b>LCS</b>							
Total Dissolved Solids			103.2		%		85-115	28-JAN-19
<b>WG2978410-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	28-JAN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4472307							
<b>WG2977134-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			90.5		%		75-125	28-JAN-19
<b>WG2977134-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.2		%		75-125	28-JAN-19
<b>WG2977134-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>WG2977134-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-JAN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4474974							
<b>WG2978097-2</b>	<b>LCS</b>							
Total Suspended Solids			90.8		%		85-115	28-JAN-19
<b>WG2978097-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	28-JAN-19



## Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4464407							
<b>WG2975757-2</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	23-JAN-19
<b>WG2975757-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	23-JAN-19

# Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---



# Quality Control Report

Workorder: L2223623

Report Date: 30-JAN-19

Page 13 of 13

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	22-JAN-19 11:24	25-JAN-19 13:10	0.25	74	hours	EHTR-FM
	2	22-JAN-19 12:27	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	3	22-JAN-19 12:44	25-JAN-19 13:10	0.25	72	hours	EHTR-FM
	4	22-JAN-19 12:00	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
	5	22-JAN-19 12:00	25-JAN-19 13:10	0.25	73	hours	EHTR-FM
pH							
	1	22-JAN-19 11:24	28-JAN-19 12:00	0.25	145	hours	EHTR-FM
	2	22-JAN-19 12:27	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	3	22-JAN-19 12:44	28-JAN-19 12:00	0.25	143	hours	EHTR-FM
	4	22-JAN-19 12:00	28-JAN-19 12:00	0.25	144	hours	EHTR-FM
	5	22-JAN-19 12:00	28-JAN-19 12:00	0.25	144	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2223623 were received on 23-JAN-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>	<b>COC_Q1_WG_20190122</b>	<b>TURNAROUND TIME:</b>	Regular	<b>RUSH:</b>	No
<b>PROJECT/CLIENT INFO</b>		<b>LABORATORY</b>		<b>OTHER INFO</b>	
Facility Name / Job#	Coal Mountain Operations	Lab Name	ALS Calgary	Report Format / Distribution	Excel PDF EDD
Project Manager	Jay Jones	Lab Contact	Lyudmyla Shvets	Email 1:	Scott.Holmgren@teck.co X X X
Email	Jay.Jones@teck.com	Email	Lyudmyla.Shvets@alsglobal.com	Email 2:	teckcoal@equisonline.co X X X
Address	PO Box 3000	Address	2559 29th St. NE	Email 3:	Don.Sacing@teck.com X X X
City	Sparwood	City	Calgary	Email 4:	Jay.Jones@teck.com X X X
Province	BC	Province	AB	PO number	<b>611069</b>
Postal Code	V0B 2G0	Postal Code	T1Y 7B5		
Country	Canada	Country	Canada		
Phone Number	1-250-425-7321	Phone Number	403 407 1800		

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered: F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA			
CM_MW1-DP_WG_2019-01-14_N	CM_MW1-DP	WG	No	1/22/2019	11:24	G	5	1	1	1	1	1			
CM_MW1-OB_WG_2019-01-14_N	CM_MW1-OB	WG	No	1/22/2019	12:29	G	5	1	1	1	1	1			
CM_MW1-SH_WG_2019-01-14_N	CM_MW1-SH	WG	No	1/22/2019	12:44	G	5	1	1	1	1	1			
CM_NNP_WG_2019-01-14_N	CM_NNP	WG	No	1/22/2019	-	G	5	1	1	1	1	1			
CM_NNT_WG_2019-01-14_N	CM_NNT	WG	No	1/22/2019	-	G	5	1	1	1	1	1			

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	1/23 9:15

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
<b>Sampler's Name</b>	SH/DS	Mobile #	250 425 7518	
<b>Sampler's Signature</b>	<i>[Signature]</i>	Date/Time	January 22, 2019	

Ac



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 25-JAN-19  
Report Date: 01-FEB-19 16:21 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2225005  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_Q1\_WG\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-1 CM_MW2-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 24-JAN-19 @ 13:44							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.99		0.50	mg/L		28-JAN-19	R4473846
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		01-FEB-19	R4483356
Total Organic Carbon	1.02		0.50	mg/L		29-JAN-19	R4473846
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-19	29-JAN-19	R4475809
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-19	30-JAN-19	R4476796
Dissolved Mercury Filtration Location	FIELD					29-JAN-19	R4474907
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-19	29-JAN-19	R4475809
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Barium (Ba)-Dissolved	0.112		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Boron (B)-Dissolved	0.054		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cadmium (Cd)-Dissolved	0.127		0.0050	ug/L	27-JAN-19	29-JAN-19	R4475809
Calcium (Ca)-Dissolved	178		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-19	29-JAN-19	R4475809
Copper (Cu)-Dissolved	0.00234		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Lead (Pb)-Dissolved	0.000189		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Lithium (Li)-Dissolved	0.0399		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
Magnesium (Mg)-Dissolved	52.0		0.10	mg/L	27-JAN-19	29-JAN-19	R4475809
Manganese (Mn)-Dissolved	0.00031		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Molybdenum (Mo)-Dissolved	0.000303		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Nickel (Ni)-Dissolved	0.00064		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Potassium (K)-Dissolved	1.61		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Selenium (Se)-Dissolved	0.10		0.050	ug/L	27-JAN-19	29-JAN-19	R4475809
Silicon (Si)-Dissolved	5.10		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Sodium (Na)-Dissolved	48.2		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Strontium (Sr)-Dissolved	0.540		0.00020	mg/L	27-JAN-19	29-JAN-19	R4475809
Thallium (Tl)-Dissolved	0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Uranium (U)-Dissolved	0.000184		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Zinc (Zn)-Dissolved	0.0109		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
<b>Hardness</b>							
Hardness (as CaCO3)	658		0.50	mg/L		29-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.1		1.0	mg/L		31-JAN-19	R4480808
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	393		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-1 CM_MW2-SH_WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 13:44 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	393		1.0	mg/L		30-JAN-19	R4477672
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0298		0.0050	mg/L		31-JAN-19	R4482668
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		25-JAN-19	R4471612
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.9	DLHC	2.5	mg/L		25-JAN-19	R4471612
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1230		2.0	uS/cm		30-JAN-19	R4477672
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.11	DLHC	0.10	mg/L		25-JAN-19	R4471612
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		31-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.6			%		31-JAN-19	
Anion Sum	15.1			meq/L		31-JAN-19	
Cation Sum	15.3			meq/L		31-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.131	DLHC	0.025	mg/L		25-JAN-19	R4471612
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-JAN-19	R4471612
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		26-JAN-19	R4470217
<b>Oxidation reduction potential by elect.</b>							
ORP	350		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0063		0.0020	mg/L		31-JAN-19	R4480827
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	344	DLHC	1.5	mg/L		25-JAN-19	R4471612
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	889	DLHC	20	mg/L		30-JAN-19	R4480807
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.4		1.0	mg/L		31-JAN-19	R4480968
<b>Turbidity</b>							
Turbidity	3.71		0.10	NTU		25-JAN-19	R4469547
<b>pH</b>							
pH	7.90		0.10	pH		30-JAN-19	R4477672
L2225005-2 CM_MW3-DP_WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 12:37 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		29-JAN-19	R4473846
Total Kjeldahl Nitrogen	0.62		0.20	mg/L		01-FEB-19	R4483356
Total Organic Carbon	<0.50		0.50	mg/L		28-JAN-19	R4473846
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	27-JAN-19	29-JAN-19	R4473787
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-19	30-JAN-19	R4476796
Dissolved Mercury Filtration Location	FIELD					29-JAN-19	R4474907
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-2 CM_MW3-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 24-JAN-19 @ 12:37							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
Aluminum (Al)-Dissolved	0.0065		0.0030	mg/L	27-JAN-19	29-JAN-19	R4473787
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Arsenic (As)-Dissolved	0.00061		0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Barium (Ba)-Dissolved	0.775		0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	27-JAN-19	29-JAN-19	R4473787
Boron (B)-Dissolved	0.522		0.020	mg/L	27-JAN-19	29-JAN-19	R4473787
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	27-JAN-19	29-JAN-19	R4473787
Calcium (Ca)-Dissolved	12.3		0.10	mg/L	27-JAN-19	29-JAN-19	R4473787
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	27-JAN-19	29-JAN-19	R4473787
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4473787
Iron (Fe)-Dissolved	0.037		0.020	mg/L	27-JAN-19	29-JAN-19	R4473787
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	27-JAN-19	29-JAN-19	R4473787
Lithium (Li)-Dissolved	1.24		0.0020	mg/L	27-JAN-19	29-JAN-19	R4473787
Magnesium (Mg)-Dissolved	4.51		0.10	mg/L	27-JAN-19	29-JAN-19	R4473787
Manganese (Mn)-Dissolved	0.0358		0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Molybdenum (Mo)-Dissolved	0.00181		0.00010	mg/L	27-JAN-19	29-JAN-19	R4473787
Nickel (Ni)-Dissolved	0.0043		0.0010	mg/L	27-JAN-19	29-JAN-19	R4473787
Potassium (K)-Dissolved	2.13		0.10	mg/L	27-JAN-19	29-JAN-19	R4473787
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	27-JAN-19	29-JAN-19	R4473787
Silicon (Si)-Dissolved	3.39		0.10	mg/L	27-JAN-19	29-JAN-19	R4473787
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	27-JAN-19	29-JAN-19	R4473787
Sodium (Na)-Dissolved	544		0.10	mg/L	27-JAN-19	29-JAN-19	R4473787
Strontium (Sr)-Dissolved	1.09		0.00040	mg/L	27-JAN-19	29-JAN-19	R4473787
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	27-JAN-19	29-JAN-19	R4473787
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	27-JAN-19	29-JAN-19	R4473787
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	27-JAN-19	29-JAN-19	R4473787
Uranium (U)-Dissolved	0.000264		0.000020	mg/L	27-JAN-19	29-JAN-19	R4473787
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	27-JAN-19	29-JAN-19	R4473787
Zinc (Zn)-Dissolved	0.0037		0.0020	mg/L	27-JAN-19	29-JAN-19	R4473787
<b>Hardness</b>							
Hardness (as CaCO3)	49.3		0.50	mg/L		29-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-19	R4480808
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	212		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Carbonate (as CaCO3)	3.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Total (as CaCO3)	215		1.0	mg/L		30-JAN-19	R4477672
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.499		0.0050	mg/L		31-JAN-19	R4482668
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	2.62	DLHC	0.25	mg/L		25-JAN-19	R4471612
<b>Chloride in Water by IC</b>							
Chloride (Cl)	743	DLHC	2.5	mg/L		25-JAN-19	R4471612
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2710		2.0	uS/cm		30-JAN-19	R4477672
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.47	DLHC	0.10	mg/L		25-JAN-19	R4471612
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-2 CM_MW3-DP_WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 12:37 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.1			%		31-JAN-19	
Anion Sum	25.3			meq/L		31-JAN-19	
Cation Sum	24.7			meq/L		31-JAN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	97.9		-100	%		31-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		25-JAN-19	R4471612
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		25-JAN-19	R4471612
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0037		0.0010	mg/L		26-JAN-19	R4470217
<b>Oxidation redution potential by elect.</b>							
ORP	304		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0097		0.0020	mg/L		31-JAN-19	R4480827
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		25-JAN-19	R4471612
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1450	DLHC	20	mg/L		30-JAN-19	R4480807
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.3		1.0	mg/L		31-JAN-19	R4480968
<b>Turbidity</b>							
Turbidity	1.96		0.10	NTU		25-JAN-19	R4469547
<b>pH</b>							
pH	8.31		0.10	pH		30-JAN-19	R4477672
L2225005-3 CM_MW3-SH_WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 11:45 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.57		0.50	mg/L		28-JAN-19	R4473846
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		01-FEB-19	R4483356
Total Organic Carbon	1.65		0.50	mg/L		28-JAN-19	R4473846
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-19	29-JAN-19	R4475809
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-19	30-JAN-19	R4476796
Dissolved Mercury Filtration Location	FIELD					29-JAN-19	R4474907
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-19	29-JAN-19	R4475809
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Barium (Ba)-Dissolved	0.0814		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Boron (B)-Dissolved	0.019		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cadmium (Cd)-Dissolved	0.0102		0.0050	ug/L	27-JAN-19	29-JAN-19	R4475809
Calcium (Ca)-Dissolved	47.8		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Chromium (Cr)-Dissolved	0.00026		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-19	29-JAN-19	R4475809

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-3 CM_MW3-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 24-JAN-19 @ 11:45							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00153		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Lead (Pb)-Dissolved	0.000073		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Lithium (Li)-Dissolved	0.0084		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
Magnesium (Mg)-Dissolved	11.9		0.10	mg/L	27-JAN-19	29-JAN-19	R4475809
Manganese (Mn)-Dissolved	0.0130		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Molybdenum (Mo)-Dissolved	0.00106		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Potassium (K)-Dissolved	0.716		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Selenium (Se)-Dissolved	0.248		0.050	ug/L	27-JAN-19	29-JAN-19	R4475809
Silicon (Si)-Dissolved	2.38		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Sodium (Na)-Dissolved	4.67		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Strontium (Sr)-Dissolved	0.275		0.00020	mg/L	27-JAN-19	29-JAN-19	R4475809
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Uranium (U)-Dissolved	0.000208		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Zinc (Zn)-Dissolved	0.0163		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
<b>Hardness</b>							
Hardness (as CaCO3)	168		0.50	mg/L		29-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-19	R4480808
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	161		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Total (as CaCO3)	161		1.0	mg/L		30-JAN-19	R4477672
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0345		0.0050	mg/L		31-JAN-19	R4482668
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-JAN-19	R4471612
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.56		0.50	mg/L		25-JAN-19	R4471612
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	319		2.0	uS/cm		30-JAN-19	R4477672
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.139		0.020	mg/L		25-JAN-19	R4471612
<b>Ion Balance Calculation</b>							
Ion Balance	99.1		-100	%		31-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.4			%		31-JAN-19	
Anion Sum	3.62			meq/L		31-JAN-19	
Cation Sum	3.59			meq/L		31-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0205		0.0050	mg/L		25-JAN-19	R4471612
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-JAN-19	R4471612
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0035		0.0010	mg/L		26-JAN-19	R4470217

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-3 CM_MW3-SH_WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 11:45 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	310		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0048		0.0020	mg/L		31-JAN-19	R4480827
<b>Sulfate in Water by IC</b> Sulfate (SO4)	15.8		0.30	mg/L		25-JAN-19	R4471612
<b>Total Dissolved Solids</b> Total Dissolved Solids	177	DLHC	20	mg/L		30-JAN-19	R4480807
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		31-JAN-19	R4480968
<b>Turbidity</b> Turbidity	0.44		0.10	NTU		25-JAN-19	R4469547
<b>pH</b> pH	8.26		0.10	pH		30-JAN-19	R4477672
L2225005-4 CM_NNP2-WG_2019-01-14_N Sampled By: SH/DS on 24-JAN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.51		0.50	mg/L		28-JAN-19	R4473846
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		01-FEB-19	R4483356
Total Organic Carbon	0.50		0.50	mg/L		28-JAN-19	R4473846
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	27-JAN-19	29-JAN-19	R4475809
Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-JAN-19	30-JAN-19	R4476796
Dissolved Mercury Filtration Location	FIELD					29-JAN-19	R4474907
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					27-JAN-19	R4470819
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	27-JAN-19	29-JAN-19	R4475809
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Barium (Ba)-Dissolved	0.0825		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Boron (B)-Dissolved	0.019		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cadmium (Cd)-Dissolved	0.0117		0.0050	ug/L	27-JAN-19	29-JAN-19	R4475809
Calcium (Ca)-Dissolved	48.6		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Chromium (Cr)-Dissolved	0.00024		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	27-JAN-19	29-JAN-19	R4475809
Copper (Cu)-Dissolved	0.00158		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Lead (Pb)-Dissolved	0.000066		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Lithium (Li)-Dissolved	0.0085		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
Magnesium (Mg)-Dissolved	12.2		0.10	mg/L	27-JAN-19	29-JAN-19	R4475809
Manganese (Mn)-Dissolved	0.0129		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Molybdenum (Mo)-Dissolved	0.00105		0.000050	mg/L	27-JAN-19	29-JAN-19	R4475809
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Potassium (K)-Dissolved	0.721		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Selenium (Se)-Dissolved	0.273		0.050	ug/L	27-JAN-19	29-JAN-19	R4475809
Silicon (Si)-Dissolved	2.40		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-4 CM_NNP2-WG_2019-01-14_N							
Sampled By: SH/DS on 24-JAN-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	4.63		0.050	mg/L	27-JAN-19	29-JAN-19	R4475809
Strontium (Sr)-Dissolved	0.276		0.00020	mg/L	27-JAN-19	29-JAN-19	R4475809
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	27-JAN-19	29-JAN-19	R4475809
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	27-JAN-19	29-JAN-19	R4475809
Uranium (U)-Dissolved	0.000211		0.000010	mg/L	27-JAN-19	29-JAN-19	R4475809
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	27-JAN-19	29-JAN-19	R4475809
Zinc (Zn)-Dissolved	0.0165		0.0010	mg/L	27-JAN-19	29-JAN-19	R4475809
<b>Hardness</b>							
Hardness (as CaCO3)	171		0.50	mg/L		29-JAN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		31-JAN-19	R4480808
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	161		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-JAN-19	R4477672
Alkalinity, Total (as CaCO3)	161		1.0	mg/L		30-JAN-19	R4477672
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0214		0.0050	mg/L		31-JAN-19	R4482668
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		25-JAN-19	R4471612
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.49		0.50	mg/L		25-JAN-19	R4471612
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	320		2.0	uS/cm		30-JAN-19	R4477672
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.136		0.020	mg/L		25-JAN-19	R4471612
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		31-JAN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.3			%		31-JAN-19	
Anion Sum	3.62			meq/L		31-JAN-19	
Cation Sum	3.65			meq/L		31-JAN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0217		0.0050	mg/L		25-JAN-19	R4471612
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		25-JAN-19	R4471612
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0037		0.0010	mg/L		26-JAN-19	R4470217
<b>Oxidation redution potential by elect.</b>							
ORP	412		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0039		0.0020	mg/L		31-JAN-19	R4480827
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	15.8		0.30	mg/L		25-JAN-19	R4471612
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	184	DLHC	20	mg/L		30-JAN-19	R4480807
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		31-JAN-19	R4480968
<b>Turbidity</b>							
Turbidity	0.56		0.10	NTU		25-JAN-19	R4469547

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2225005-4    CM_NNP2-WG_2019-01-14_N Sampled By:   SH/DS on 24-JAN-19 @ 12:00 Matrix:        WG <b>pH</b> pH	8.18		0.10	pH		30-JAN-19	R4477672

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-F-CL	Water	Total Kjeldahl Nitrogen by Fluorescence	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_Q1\_WG\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4480808							
<b>WG2980590-9</b>	<b>DUP</b>	<b>L2225005-4</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	31-JAN-19
<b>WG2980590-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.5		%		85-115	31-JAN-19
<b>WG2980590-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	31-JAN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4477672							
<b>WG2979616-18</b>	<b>DUP</b>	<b>L2225005-4</b>						
Alkalinity, Total (as CaCO3)		161	161		mg/L	0.2	20	30-JAN-19
<b>WG2979616-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	30-JAN-19
<b>WG2979616-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-JAN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4473787							
<b>WG2977856-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			92.2		%		80-120	29-JAN-19
<b>WG2977856-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-JAN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2</b>	<b>LCS</b>							
Bromide (Br)			102.1		%		85-115	25-JAN-19
<b>WG2978229-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	25-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4473846							
<b>WG2978810-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.7		%		80-120	28-JAN-19
<b>WG2978810-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4473846							
<b>WG2978810-6</b>	<b>LCS</b>							
Total Organic Carbon			109.9		%		80-120	28-JAN-19
<b>WG2978810-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4473846							
<b>WG2978810-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	28-JAN-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2 LCS</b>								
Chloride (Cl)			100.1		%		90-110	25-JAN-19
<b>WG2978229-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	25-JAN-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4477672							
<b>WG2979616-18 DUP</b>		<b>L2225005-4</b>						
Conductivity (@ 25C)		320	320		uS/cm	0.0	10	30-JAN-19
<b>WG2979616-17 LCS</b>								
Conductivity (@ 25C)			98.8		%		90-110	30-JAN-19
<b>WG2979616-16 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	30-JAN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2 LCS</b>								
Fluoride (F)			103.5		%		90-110	25-JAN-19
<b>WG2978229-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	25-JAN-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4476796							
<b>WG2978943-2 LCS</b>								
Mercury (Hg)-Dissolved			99.8		%		80-120	30-JAN-19
<b>WG2978943-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-JAN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4473787							
<b>WG2977856-2 LCS</b>								
Aluminum (Al)-Dissolved			98.4		%		80-120	29-JAN-19
Antimony (Sb)-Dissolved			96.4		%		80-120	29-JAN-19
Arsenic (As)-Dissolved			92.7		%		80-120	29-JAN-19
Barium (Ba)-Dissolved			98.9		%		80-120	29-JAN-19
Bismuth (Bi)-Dissolved			94.6		%		80-120	29-JAN-19





## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4473787</b>							
<b>WG2977856-2</b>	<b>LCS</b>							
Boron (B)-Dissolved			92.7		%		80-120	29-JAN-19
Cadmium (Cd)-Dissolved			96.1		%		80-120	29-JAN-19
Calcium (Ca)-Dissolved			95.1		%		80-120	29-JAN-19
Chromium (Cr)-Dissolved			94.4		%		80-120	29-JAN-19
Cobalt (Co)-Dissolved			96.0		%		80-120	29-JAN-19
Copper (Cu)-Dissolved			93.7		%		80-120	29-JAN-19
Iron (Fe)-Dissolved			92.2		%		80-120	29-JAN-19
Lead (Pb)-Dissolved			93.3		%		80-120	29-JAN-19
Lithium (Li)-Dissolved			91.2		%		80-120	29-JAN-19
Magnesium (Mg)-Dissolved			95.0		%		80-120	29-JAN-19
Manganese (Mn)-Dissolved			97.2		%		80-120	29-JAN-19
Molybdenum (Mo)-Dissolved			100.4		%		80-120	29-JAN-19
Nickel (Ni)-Dissolved			94.2		%		80-120	29-JAN-19
Potassium (K)-Dissolved			94.6		%		80-120	29-JAN-19
Selenium (Se)-Dissolved			95.6		%		80-120	29-JAN-19
Silicon (Si)-Dissolved			99.2		%		60-140	29-JAN-19
Silver (Ag)-Dissolved			92.6		%		80-120	29-JAN-19
Sodium (Na)-Dissolved			101.2		%		80-120	29-JAN-19
Strontium (Sr)-Dissolved			96.3		%		80-120	29-JAN-19
Thallium (Tl)-Dissolved			94.6		%		80-120	29-JAN-19
Tin (Sn)-Dissolved			95.5		%		80-120	29-JAN-19
Titanium (Ti)-Dissolved			94.1		%		80-120	29-JAN-19
Uranium (U)-Dissolved			93.1		%		80-120	29-JAN-19
Vanadium (V)-Dissolved			97.0		%		80-120	29-JAN-19
Zinc (Zn)-Dissolved			94.2		%		80-120	29-JAN-19
<b>WG2977856-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-JAN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-JAN-19



## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4473787</b>							
<b>WG2977856-1</b>	<b>MB</b>	<b>NP</b>						
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-JAN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-JAN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-JAN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-JAN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-JAN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-JAN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-JAN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-JAN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-JAN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-JAN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4482668</b>							
<b>WG2981540-7</b>	<b>DUP</b>	<b>L2225005-1</b>						
Ammonia as N		0.0298	0.0292		mg/L	2.0	20	31-JAN-19
<b>WG2981540-6</b>	<b>LCS</b>							
Ammonia as N			102.6		%		85-115	31-JAN-19
<b>WG2981540-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	31-JAN-19
<b>WG2981540-8</b>	<b>MS</b>	<b>L2225005-1</b>						
Ammonia as N			87.9		%		75-125	31-JAN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2</b>	<b>LCS</b>							
Nitrite (as N)			105.1		%		90-110	25-JAN-19
<b>WG2978229-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	25-JAN-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2</b>	<b>LCS</b>							
Nitrate (as N)			100.5		%		90-110	25-JAN-19
<b>WG2978229-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	25-JAN-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4475811							
<b>WG2979322-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	29-JAN-19
<b>WG2979322-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	29-JAN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4480827							
<b>WG2980929-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.9		%		80-120	31-JAN-19
<b>WG2980929-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-JAN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4477672							
<b>WG2979616-18</b>	<b>DUP</b>	<b>L2225005-4</b>						
pH		8.18	8.19	J	pH	0.01	0.2	30-JAN-19
<b>WG2979616-17</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	30-JAN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4470217							
<b>WG2977530-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			105.5		%		80-120	26-JAN-19
<b>WG2977530-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4471612							
<b>WG2978229-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.9		%		90-110	25-JAN-19
<b>WG2978229-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	25-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4480807							
<b>WG2979635-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.2		%		85-115	30-JAN-19
<b>WG2979635-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	30-JAN-19
<b>TKN-F-CL</b>	<b>Water</b>							
Batch	R4483356							
<b>WG2979665-3</b>	<b>DUP</b>	<b>L2225005-1</b>						
Total Kjeldahl Nitrogen		<0.20	<0.20	RPD-NA	mg/L	N/A	20	01-FEB-19
<b>WG2979665-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			95.1		%		75-125	01-FEB-19
<b>WG2979665-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	01-FEB-19
<b>WG2979665-4</b>	<b>MS</b>	<b>L2225005-1</b>						
Total Kjeldahl Nitrogen			92.4		%		70-130	01-FEB-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4480968							
<b>WG2979584-5</b>	<b>LCS</b>							
Total Suspended Solids			112.3		%		85-115	31-JAN-19
<b>WG2979584-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-JAN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4469547							
<b>WG2977363-17</b>	<b>LCS</b>							
Turbidity			95.5		%		85-115	25-JAN-19
<b>WG2977363-16</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	25-JAN-19

# Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2225005

Report Date: 01-FEB-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	24-JAN-19 13:44	29-JAN-19 09:00	0.25	115	hours	EHTR-FM
	2	24-JAN-19 12:37	29-JAN-19 09:00	0.25	116	hours	EHTR-FM
	3	24-JAN-19 11:45	29-JAN-19 09:00	0.25	117	hours	EHTR-FM
	4	24-JAN-19 12:00	29-JAN-19 09:00	0.25	117	hours	EHTR-FM
pH							
	1	24-JAN-19 13:44	30-JAN-19 09:00	0.25	139	hours	EHTR-FM
	2	24-JAN-19 12:37	30-JAN-19 09:00	0.25	140	hours	EHTR-FM
	3	24-JAN-19 11:45	30-JAN-19 09:00	0.25	141	hours	EHTR-FM
	4	24-JAN-19 12:00	30-JAN-19 09:00	0.25	141	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2225005 were received on 25-JAN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

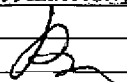
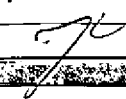
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>COC_Q1_WG_2019</b>		TURNAROUND TIME: Regular			RUSH: No							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Scott.Holmgren@teck.co	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.co			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	Don.Sacino@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	Jay.jones@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	<b>611069</b>			
Phone Number	1-250-425-7321			Phone Number	403 407 1800							

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None																													
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PREP	F	N	F	F	N																													
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA																														
CM_MW2-SH_WG_2019-01-14_N	CM_MW2-SH	WG	No	1/24/2019	13:44	G	5	1	1	1	1	1																														
CM_MW3-DP_WG_2019-01-14_N	CM_MW3-DP	WG	No	1/24/2019	12:37	G	5	1	1	1	1	1																														
CM_MW3-SH_WG_2019-01-14_N	CM_MW3-SH	WG	No	1/24/2019	11:45	G	5	1	1	1	1	1																														
CM_NNP2_WG_2019-01-14_N	CM_NNP2	WG	No	1/24/2019	-	G	5	1	1	1	1	1																														



L2225005-COFC

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
								1/25 9:00 	
<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>Sampler's Name</b>		<b>SH/DS</b>		<b>Mobile #</b>		<b>250 425 7518</b>	
Regular (default) X									
Priority (2-3 business days) - 50% surcharge									
Emergency (1 Business Day) - 100% surcharge									
For Emergency <1 Day, ASAP or Weekend - Contact ALS		<b>Sampler's Signature</b>				<b>Date/Time</b>		<b>January 24, 2019</b>	



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 29-JAN-19  
Report Date: 06-FEB-19 18:10 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2226060  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_Q1\_WG\_01282019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-1 CM_MW4-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 28-JAN-19 @ 14:08							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.70		0.50	mg/L		30-JAN-19	R4479020
Total Kjeldahl Nitrogen	0.431		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	0.67		0.50	mg/L		30-JAN-19	R4479020
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	31-JAN-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-JAN-19	01-FEB-19	R4482911
Dissolved Mercury Filtration Location	FIELD					31-JAN-19	R4479069
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-JAN-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	0.374		0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.379		0.020	mg/L	31-JAN-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	31-JAN-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	5.75		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	31-JAN-19	03-FEB-19	R4486228
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	0.033		0.020	mg/L	31-JAN-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.807		0.0020	mg/L	31-JAN-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	1.43		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	0.00267		0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.00082		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	1.05		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	31-JAN-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	3.99		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	31-JAN-19	03-FEB-19	R4486228
Sodium (Na)-Dissolved	573		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	0.787		0.00040	mg/L	31-JAN-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	31-JAN-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	31-JAN-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	31-JAN-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	20.2		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484732
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	707		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Carbonate (as CaCO3)	58.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484732

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-1 CM_MW4-DP_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 14:08 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	765		1.0	mg/L		02-FEB-19	R4484732
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.491		0.0050	mg/L		05-FEB-19	R4489628
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	1.35	DLHC	0.25	mg/L		29-JAN-19	R4476470
<b>Chloride in Water by IC</b>							
Chloride (Cl)	349	DLHC	2.5	mg/L		29-JAN-19	R4476470
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2330		2.0	uS/cm		02-FEB-19	R4484732
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.50	DLHC	0.10	mg/L		29-JAN-19	R4476470
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		04-FEB-19	
Anion Sum	25.1			meq/L		04-FEB-19	
Cation Sum	25.4			meq/L		04-FEB-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-JAN-19	R4476470
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-JAN-19	R4476470
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0102		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation reduction potential by elect.</b>							
ORP	395		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0103		0.0020	mg/L		05-FEB-19	R4487228
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		29-JAN-19	R4476470
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1390	DLHC	20	mg/L		31-JAN-19	R4482885
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.3		1.0	mg/L		31-JAN-19	R4482889
<b>Turbidity</b>							
Turbidity	3.39		0.10	NTU		29-JAN-19	R4475568
<b>pH</b>							
pH	8.70		0.10	pH		02-FEB-19	R4484732
L2226060-2 CM_MW4-SH_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 14:28 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.89		0.50	mg/L		30-JAN-19	R4479020
Total Kjeldahl Nitrogen	0.294		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	0.80		0.50	mg/L		30-JAN-19	R4479020
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-JAN-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-JAN-19	01-FEB-19	R4482911
Dissolved Mercury Filtration Location	FIELD					31-JAN-19	R4479069
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-2 CM_MW4-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 28-JAN-19 @ 14:28							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-JAN-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	0.281		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.369		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-JAN-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	7.09		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-JAN-19	03-FEB-19	R4486228
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	0.031		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.398		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	2.52		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	0.00694		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.000717		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	1.01		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-JAN-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	4.15		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Sodium (Na)-Dissolved	314		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	0.743		0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	0.000011		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	28.1		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484733
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	509		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Carbonate (as CaCO3)	32.8		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Total (as CaCO3)	542		1.0	mg/L		02-FEB-19	R4484732
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.384	RRV	0.0050	mg/L		06-FEB-19	R4489628
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.39	DLHC	0.25	mg/L		29-JAN-19	R4476470
<b>Chloride in Water by IC</b>							
Chloride (Cl)	104	DLHC	2.5	mg/L		29-JAN-19	R4476470
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1290		2.0	uS/cm		02-FEB-19	R4484732
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.43	DLHC	0.10	mg/L		29-JAN-19	R4476470
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-2 CM_MW4-SH_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 14:28 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.7			%		04-FEB-19	
Anion Sum	14.1			meq/L		04-FEB-19	
Cation Sum	14.3			meq/L		04-FEB-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-JAN-19	R4476470
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-JAN-19	R4476470
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0100		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation redution potential by elect.</b>							
ORP	424		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0088		0.0020	mg/L		04-FEB-19	R4487228
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	13.8	DLHC	1.5	mg/L		29-JAN-19	R4476470
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	766	DLHC	20	mg/L		31-JAN-19	R4482885
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		31-JAN-19	R4482889
<b>Turbidity</b>							
Turbidity	1.48		0.10	NTU		29-JAN-19	R4475568
<b>pH</b>							
pH	8.66		0.10	pH		02-FEB-19	R4484732
L2226060-3 CM_MW6-DP_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 12:25 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	3.26	DTC	0.50	mg/L		30-JAN-19	R4479020
Total Kjeldahl Nitrogen	0.377		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	1.22	DTC	0.50	mg/L		30-JAN-19	R4479020
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-JAN-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-JAN-19	01-FEB-19	R4482911
Dissolved Mercury Filtration Location	FIELD					31-JAN-19	R4479069
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-JAN-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	0.00053		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	0.318		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.330		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-JAN-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	11.1		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-JAN-19	03-FEB-19	R4486228

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-3 CM_MW6-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 28-JAN-19 @ 12:25							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	0.131		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.403		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	4.02		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	0.0697		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.00641		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	1.98		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	0.110		0.050	ug/L	31-JAN-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	4.44		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Sodium (Na)-Dissolved	325		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	0.935		0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	0.00107		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	44.2		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484733
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	645		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Carbonate (as CaCO3)	48.6		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Total (as CaCO3)	694		1.0	mg/L		02-FEB-19	R4484732
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.450		0.0050	mg/L		05-FEB-19	R4489628
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		29-JAN-19	R4476470
<b>Chloride in Water by IC</b>							
Chloride (Cl)	36.4	DLHC	2.5	mg/L		29-JAN-19	R4476470
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		02-FEB-19	R4484732
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.51	DLHC	0.10	mg/L		29-JAN-19	R4476470
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		04-FEB-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.1			%		04-FEB-19	
Anion Sum	15.0			meq/L		04-FEB-19	
Cation Sum	15.1			meq/L		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		29-JAN-19	R4476470
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		29-JAN-19	R4476470
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0222		0.0010	mg/L		30-JAN-19	R4479453

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-3 CM_MW6-DP_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 12:25 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	298		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0212		0.0020	mg/L		04-FEB-19	R4487228
<b>Sulfate in Water by IC</b> Sulfate (SO4)	5.8	DLHC	1.5	mg/L		29-JAN-19	R4476470
<b>Total Dissolved Solids</b> Total Dissolved Solids	786	DLHC	20	mg/L		31-JAN-19	R4482885
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		31-JAN-19	R4482889
<b>Turbidity</b> Turbidity	4.04		0.10	NTU		29-JAN-19	R4475568
<b>pH</b> pH	8.69		0.10	pH		02-FEB-19	R4484732
L2226060-4 CM_MW6-SH_WG_2019-01-14_N Sampled By: SH/DS on 28-JAN-19 @ 12:50 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	2.37		0.50	mg/L		30-JAN-19	R4479020
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	2.30		0.50	mg/L		30-JAN-19	R4479020
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-JAN-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	31-JAN-19	01-FEB-19	R4482911
Dissolved Mercury Filtration Location	FIELD					31-JAN-19	R4479069
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					31-JAN-19	R4478594
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-JAN-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	0.00051		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	0.132		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.044		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-JAN-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	19.8		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	31-JAN-19	03-FEB-19	R4486228
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	0.124		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.0418		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	7.59		0.10	mg/L	31-JAN-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	0.245		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.00683		0.000050	mg/L	31-JAN-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	0.00062		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	0.338		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-JAN-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	3.40		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-4 CM_MW6-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 28-JAN-19 @ 12:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	73.9		0.050	mg/L	31-JAN-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	0.205		0.00020	mg/L	31-JAN-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-JAN-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-JAN-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	0.000467		0.000010	mg/L	31-JAN-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-JAN-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	31-JAN-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	80.7		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484733
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Carbonate (as CaCO3)	5.2		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Total (as CaCO3)	207		1.0	mg/L		02-FEB-19	R4484732
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0340		0.0050	mg/L		05-FEB-19	R4489628
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.156		0.050	mg/L		29-JAN-19	R4476470
<b>Chloride in Water by IC</b>							
Chloride (Cl)	18.9		0.50	mg/L		29-JAN-19	R4476470
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	434		2.0	uS/cm		02-FEB-19	R4484732
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.60		0.020	mg/L		29-JAN-19	R4476470
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.6			%		04-FEB-19	
Anion Sum	4.91			meq/L		04-FEB-19	
Cation Sum	4.85			meq/L		04-FEB-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.8		-100	%		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		29-JAN-19	R4476470
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JAN-19	R4476470
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation redution potential by elect.</b>							
ORP	316		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0040		0.0020	mg/L		04-FEB-19	R4487228
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	7.56		0.30	mg/L		29-JAN-19	R4476470
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	229	DLHC	20	mg/L		31-JAN-19	R4482885
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.6		1.0	mg/L		31-JAN-19	R4482889
<b>Turbidity</b>							
Turbidity	3.11		0.10	NTU		29-JAN-19	R4475568

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.





## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226060-5 CM_TRP_WG_2019-01-14_N							
Sampled By: SH/DS on 28-JAN-19 @ 12:00							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	2.2		1.0	mg/L		03-FEB-19	R4484911
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		02-FEB-19	R4484732
Alkalinity, Total (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		02-FEB-19	R4484732
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		05-FEB-19	R4489628
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		29-JAN-19	R4476470
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		29-JAN-19	R4476470
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		02-FEB-19	R4484732
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		29-JAN-19	R4476470
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		04-FEB-19	
Anion Sum	<0.10			meq/L		04-FEB-19	
Cation Sum	<0.10			meq/L		04-FEB-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		29-JAN-19	R4476470
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		29-JAN-19	R4476470
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation redution potential by elect.</b>							
ORP	407		-1000	mV		29-JAN-19	R4475811
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-FEB-19	R4487228
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	<0.30		0.30	mg/L		29-JAN-19	R4476470
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		31-JAN-19	R4482885
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		31-JAN-19	R4482889
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		29-JAN-19	R4475568
<b>pH</b>							
pH	5.45		0.10	pH		02-FEB-19	R4484732

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

COC\_Q1\_WG\_01282019

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

- mg/kg - milligrams per kilogram based on dry weight of sample*
- mg/kg wwt - milligrams per kilogram based on wet weight of sample*
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
- mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 1 of 12

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
<b>Batch R4484733</b>								
<b>WG2982037-6</b>	<b>DUP</b>	<b>L2226060-1</b>						
Acidity (as CaCO3)		<1.0	<1.0	RPD-NA	mg/L	N/A	20	02-FEB-19
<b>WG2982037-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			96.2		%		85-115	02-FEB-19
<b>WG2982037-4</b>	<b>MB</b>							
Acidity (as CaCO3)			2.0		mg/L		2	02-FEB-19
<b>Batch R4484911</b>								
<b>WG2982171-3</b>	<b>DUP</b>	<b>L2226060-5</b>						
Acidity (as CaCO3)		2.2	2.1		mg/L	1.9	20	03-FEB-19
<b>WG2982171-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			92.5		%		85-115	03-FEB-19
<b>WG2982171-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	03-FEB-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
<b>Batch R4484732</b>								
<b>WG2982032-12</b>	<b>DUP</b>	<b>L2226060-1</b>						
Alkalinity, Total (as CaCO3)		765	763		mg/L	0.3	20	02-FEB-19
<b>WG2982032-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.3		%		85-115	02-FEB-19
<b>WG2982032-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	02-FEB-19
<b>WG2982032-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-FEB-19
<b>WG2982032-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	02-FEB-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
<b>Batch R4484697</b>								
<b>WG2980209-3</b>	<b>DUP</b>	<b>L2226060-5</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	02-FEB-19
<b>WG2980209-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.0		%		80-120	02-FEB-19
<b>WG2980209-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	02-FEB-19
<b>Batch R4486228</b>								
<b>WG2980210-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.0		%		80-120	03-FEB-19
<b>WG2980210-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-19



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b> <b>Water</b>								
Batch	R4476470							
<b>WG2979673-6</b>	<b>LCS</b>							
Bromide (Br)			101.9		%		85-115	29-JAN-19
<b>WG2979673-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-JAN-19
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4479020							
<b>WG2980441-3</b>	<b>DUP</b>	<b>L2226060-1</b>						
Dissolved Organic Carbon		0.70	0.76		mg/L	8.5	20	30-JAN-19
<b>WG2980441-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.2		%		80-120	30-JAN-19
<b>WG2980441-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-JAN-19
<b>WG2980441-4</b>	<b>MS</b>	<b>L2226060-5</b>						
Dissolved Organic Carbon			100.8		%		70-130	30-JAN-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4479020							
<b>WG2980441-3</b>	<b>DUP</b>	<b>L2226060-1</b>						
Total Organic Carbon		0.67	0.60		mg/L	11	20	30-JAN-19
<b>WG2980441-2</b>	<b>LCS</b>							
Total Organic Carbon			95.3		%		80-120	30-JAN-19
<b>WG2980441-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	30-JAN-19
<b>WG2980441-4</b>	<b>MS</b>	<b>L2226060-5</b>						
Total Organic Carbon			87.5		%		70-130	30-JAN-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4476470							
<b>WG2979673-6</b>	<b>LCS</b>							
Chloride (Cl)			99.6		%		90-110	29-JAN-19
<b>WG2979673-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	29-JAN-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4484732							
<b>WG2982032-12</b>	<b>DUP</b>	<b>L2226060-1</b>						
Conductivity (@ 25C)		2330	2330		uS/cm	0.0	10	02-FEB-19
<b>WG2982032-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.9		%		90-110	02-FEB-19
<b>WG2982032-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>EC-L-PCT-CL</b>		<b>Water</b>							
<b>Batch R4484732</b>									
<b>WG2982032-2</b>	<b>LCS</b>								
Conductivity (@ 25C)			96.5		%		90-110	02-FEB-19	
<b>WG2982032-1</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-FEB-19	
<b>WG2982032-10</b>	<b>MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	02-FEB-19	
<b>F-IC-N-CL</b>		<b>Water</b>							
<b>Batch R4476470</b>									
<b>WG2979673-6</b>	<b>LCS</b>								
Fluoride (F)			103.8		%		90-110	29-JAN-19	
<b>WG2979673-5</b>	<b>MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	29-JAN-19	
<b>HG-D-CVAA-VA</b>		<b>Water</b>							
<b>Batch R4482911</b>									
<b>WG2980449-6</b>	<b>LCS</b>								
Mercury (Hg)-Dissolved			98.4		%		80-120	01-FEB-19	
<b>WG2980449-5</b>	<b>MB</b>	<b>NP</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-FEB-19	
<b>MET-D-CCMS-VA</b>		<b>Water</b>							
<b>Batch R4484697</b>									
<b>WG2980209-3</b>	<b>DUP</b>	<b>L2226060-5</b>							
Aluminum (Al)-Dissolved			<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	02-FEB-19
Antimony (Sb)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Arsenic (As)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Barium (Ba)-Dissolved			<0.00010	0.00018	RPD-NA	mg/L	N/A	20	02-FEB-19
Bismuth (Bi)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-FEB-19
Boron (B)-Dissolved			<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	02-FEB-19
Calcium (Ca)-Dissolved			<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-FEB-19
Chromium (Cr)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Cobalt (Co)-Dissolved			<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Copper (Cu)-Dissolved			<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-FEB-19
Iron (Fe)-Dissolved			<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-FEB-19
Lead (Pb)-Dissolved			<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-FEB-19
Lithium (Li)-Dissolved			<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-FEB-19
Magnesium (Mg)-Dissolved			<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-FEB-19



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484697</b>							
<b>WG2980209-3</b>	<b>DUP</b>	<b>L2226060-5</b>						
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-FEB-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-FEB-19
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-FEB-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-FEB-19
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-FEB-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-FEB-19
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-FEB-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-FEB-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-FEB-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-FEB-19
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-FEB-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-FEB-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-FEB-19
<b>WG2980209-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.6		%		80-120	02-FEB-19
Antimony (Sb)-Dissolved			101.2		%		80-120	02-FEB-19
Arsenic (As)-Dissolved			98.6		%		80-120	02-FEB-19
Barium (Ba)-Dissolved			105.1		%		80-120	02-FEB-19
Bismuth (Bi)-Dissolved			94.8		%		80-120	02-FEB-19
Boron (B)-Dissolved			101.9		%		80-120	02-FEB-19
Cadmium (Cd)-Dissolved			98.2		%		80-120	02-FEB-19
Calcium (Ca)-Dissolved			103.6		%		80-120	02-FEB-19
Chromium (Cr)-Dissolved			97.6		%		80-120	02-FEB-19
Cobalt (Co)-Dissolved			98.7		%		80-120	02-FEB-19
Copper (Cu)-Dissolved			97.5		%		80-120	02-FEB-19
Iron (Fe)-Dissolved			96.6		%		80-120	02-FEB-19
Lead (Pb)-Dissolved			96.3		%		80-120	02-FEB-19
Lithium (Li)-Dissolved			100.3		%		80-120	02-FEB-19
Magnesium (Mg)-Dissolved			100.6		%		80-120	02-FEB-19
Manganese (Mn)-Dissolved			99.4		%		80-120	02-FEB-19
Molybdenum (Mo)-Dissolved			102.3		%		80-120	02-FEB-19
Nickel (Ni)-Dissolved			97.0		%		80-120	02-FEB-19
Potassium (K)-Dissolved			95.5		%		80-120	02-FEB-19





## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484697</b>							
<b>WG2980209-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			96.3		%		80-120	02-FEB-19
Silicon (Si)-Dissolved			99.0		%		60-140	02-FEB-19
Silver (Ag)-Dissolved			96.1		%		80-120	02-FEB-19
Sodium (Na)-Dissolved			100.2		%		80-120	02-FEB-19
Strontium (Sr)-Dissolved			97.8		%		80-120	02-FEB-19
Thallium (Tl)-Dissolved			92.2		%		80-120	02-FEB-19
Tin (Sn)-Dissolved			98.8		%		80-120	02-FEB-19
Titanium (Ti)-Dissolved			99.9		%		80-120	02-FEB-19
Uranium (U)-Dissolved			96.1		%		80-120	02-FEB-19
Vanadium (V)-Dissolved			101.7		%		80-120	02-FEB-19
Zinc (Zn)-Dissolved			102.9		%		80-120	02-FEB-19
<b>WG2980209-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			0.0011	MB-LOR	mg/L		0.001	02-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	02-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	02-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	02-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	02-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	02-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	02-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	02-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	02-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-19



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4484697</b>							
<b>WG2980209-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	02-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	02-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	02-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	02-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	02-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	02-FEB-19
Zinc (Zn)-Dissolved			0.0021	MB-LOR	mg/L		0.001	02-FEB-19
<b>Batch</b>	<b>R4485930</b>							
<b>WG2980209-3</b>	<b>DUP</b>	<b>L2226060-5</b>						
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-FEB-19
<b>Batch</b>	<b>R4486228</b>							
<b>WG2980210-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.4		%		80-120	03-FEB-19
Antimony (Sb)-Dissolved			97.9		%		80-120	03-FEB-19
Arsenic (As)-Dissolved			96.7		%		80-120	03-FEB-19
Barium (Ba)-Dissolved			100.0		%		80-120	03-FEB-19
Bismuth (Bi)-Dissolved			94.3		%		80-120	03-FEB-19
Boron (B)-Dissolved			95.9		%		80-120	03-FEB-19
Cadmium (Cd)-Dissolved			91.1		%		80-120	03-FEB-19
Calcium (Ca)-Dissolved			95.7		%		80-120	03-FEB-19
Chromium (Cr)-Dissolved			97.3		%		80-120	03-FEB-19
Cobalt (Co)-Dissolved			97.8		%		80-120	03-FEB-19
Copper (Cu)-Dissolved			96.7		%		80-120	03-FEB-19
Iron (Fe)-Dissolved			92.2		%		80-120	03-FEB-19
Lead (Pb)-Dissolved			93.3		%		80-120	03-FEB-19
Lithium (Li)-Dissolved			95.0		%		80-120	03-FEB-19
Magnesium (Mg)-Dissolved			98.2		%		80-120	03-FEB-19
Manganese (Mn)-Dissolved			99.3		%		80-120	03-FEB-19
Molybdenum (Mo)-Dissolved			99.5		%		80-120	03-FEB-19
Nickel (Ni)-Dissolved			98.6		%		80-120	03-FEB-19
Potassium (K)-Dissolved			97.3		%		80-120	03-FEB-19
Selenium (Se)-Dissolved			94.5		%		80-120	03-FEB-19
Silicon (Si)-Dissolved			104.7		%		60-140	03-FEB-19



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4486228</b>							
<b>WG2980210-2</b>	<b>LCS</b>							
Silver (Ag)-Dissolved			92.9		%		80-120	03-FEB-19
Sodium (Na)-Dissolved			102.4		%		80-120	03-FEB-19
Strontium (Sr)-Dissolved			96.9		%		80-120	03-FEB-19
Thallium (Tl)-Dissolved			91.2		%		80-120	03-FEB-19
Tin (Sn)-Dissolved			92.7		%		80-120	03-FEB-19
Titanium (Ti)-Dissolved			94.7		%		80-120	03-FEB-19
Uranium (U)-Dissolved			91.4		%		80-120	03-FEB-19
Vanadium (V)-Dissolved			99.2		%		80-120	03-FEB-19
Zinc (Zn)-Dissolved			94.9		%		80-120	03-FEB-19
<b>WG2980210-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19



## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4486228</b>							
<b>WG2980210-1</b>	<b>MB</b>	<b>NP</b>						
Thallium (Tl)-Dissolved			<0.00010		mg/L		0.00001	03-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Zinc (Zn)-Dissolved			0.0024	MB-LOR	mg/L		0.001	03-FEB-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4489628</b>							
<b>WG2983595-7</b>	<b>DUP</b>	<b>L2226060-5</b>						
Ammonia as N		<0.0050	0.0057	RPD-NA	mg/L	N/A	20	05-FEB-19
<b>WG2983595-6</b>	<b>LCS</b>							
Ammonia as N			89.7		%		85-115	05-FEB-19
<b>WG2983595-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-FEB-19
<b>WG2983595-8</b>	<b>MS</b>	<b>L2226060-5</b>						
Ammonia as N			103.1		%		75-125	05-FEB-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4476470</b>							
<b>WG2979673-6</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	29-JAN-19
<b>WG2979673-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-JAN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4476470</b>							
<b>WG2979673-6</b>	<b>LCS</b>							
Nitrate (as N)			99.8		%		90-110	29-JAN-19
<b>WG2979673-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-JAN-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4475811</b>							
<b>WG2979322-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	29-JAN-19
<b>WG2979322-10</b>	<b>DUP</b>	<b>L2226060-4</b>						
ORP		316	311	J	mV	5.0	15	29-JAN-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4486753</b>							
<b>WG2980629-3</b>	<b>DUP</b>	<b>L2226060-1</b>						
Total Kjeldahl Nitrogen		0.431	0.378		mg/L	13	20	04-FEB-19
<b>WG2980629-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.6		%		75-125	04-FEB-19
<b>WG2980629-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			84.8		%		75-125	04-FEB-19
<b>WG2980629-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-19
<b>WG2980629-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-19
<b>WG2980629-4</b>	<b>MS</b>	<b>L2226060-1</b>						
Total Kjeldahl Nitrogen			77.6		%		70-130	04-FEB-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4482889</b>							
<b>WG2980414-4</b>	<b>LCS</b>							
Total Suspended Solids			95.7		%		85-115	31-JAN-19
<b>WG2980414-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	31-JAN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4475568</b>							
<b>WG2979294-5</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	29-JAN-19
<b>WG2979294-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-JAN-19

# Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2226060

Report Date: 06-FEB-19

Page 12 of 12

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	28-JAN-19 14:08	29-JAN-19 16:05	0.25	26	hours	EHTR-FM
	2	28-JAN-19 14:28	29-JAN-19 16:05	0.25	26	hours	EHTR-FM
	3	28-JAN-19 12:25	29-JAN-19 16:05	0.25	28	hours	EHTR-FM
	4	28-JAN-19 12:50	29-JAN-19 16:05	0.25	27	hours	EHTR-FM
	5	28-JAN-19 12:00	29-JAN-19 16:05	0.25	28	hours	EHTR-FM
pH	1	28-JAN-19 14:08	02-FEB-19 09:00	0.25	115	hours	EHTR-FM
	2	28-JAN-19 14:28	02-FEB-19 09:00	0.25	114	hours	EHTR-FM
	3	28-JAN-19 12:25	02-FEB-19 09:00	0.25	117	hours	EHTR-FM
	4	28-JAN-19 12:50	02-FEB-19 09:00	0.25	116	hours	EHTR-FM
	5	28-JAN-19 12:00	02-FEB-19 09:00	0.25	117	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2226060 were received on 29-JAN-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID:	COC_Q1_WG_01282019			TURNAROUND TIME:	Regular	RUSH:	No					
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>						
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary		Report Format / Distribution	Excel	PDF	EDD		
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets		Email 1:	Scott.Holmgren@teck.co	X	X	X	
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.co			X	
Address	PO Box 3000			Address	2559 29th St. NE		Email 3:	Don.Sacino@teck.com	X	X	X	
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	Jay.jones@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	PO number	611069			
Phone Number	1-250-425-7321			Phone Number	403 407 1800							



L2226060-COFC

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_MW4-DP_WG_2019-01-14_N	CM_MW4-DP	WG	No	1/28/2019	14:06	G	5	1	1	1	1	1								
CM_MW4-SH_WG_2019-01-14_N	CM_MW4-SH	WG	No	1/28/2019	14:26	G	5	1	1	1	1	1								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]								
CM_MW6-DP_WG_2019-01-14_N	CM_MW6-DP	WG	No	1/28/2019	12:25	G	5	1	1	1	1	1								
CM_MW6-SH_WG_2019-01-14_N	CM_MW6-SH	WG	No	1/28/2019	12:50	G	5	1	1	1	1	1								
CM_TRP_WG_2019-01-14_N	CM_TRP	WG	No	1/28/2019	-	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Ma</i>	1/24/19

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	SH/DS	Mobile #	250 425 7518	
Sampler's Signature	<i>[Signature]</i>	Date/Time	January 28, 2019	



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 30-JAN-19  
Report Date: 06-FEB-19 18:23 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2226352  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_Q1\_WG\_01292019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226352-1 CM_MW5-DP_WG_2019-01-14_N							
Sampled By: SH/DS on 29-JAN-19 @ 13:55							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		03-FEB-19	R4484809
Total Kjeldahl Nitrogen	0.577		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	<0.50		0.50	mg/L		02-FEB-19	R4484834
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	01-FEB-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					01-FEB-19	R4483747
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-FEB-19	05-FEB-19	R4487809
Dissolved Mercury Filtration Location	FIELD					03-FEB-19	R4484946
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					01-FEB-19	R4483747
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	01-FEB-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	1.11		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.133		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	01-FEB-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	70.2		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	01-FEB-19	03-FEB-19	R4486228
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	1.24		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.0773		0.0010	mg/L	01-FEB-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	25.9		0.10	mg/L	01-FEB-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	0.0371		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.00133		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	0.00205		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	3.29		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	0.050		0.050	ug/L	01-FEB-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	6.11		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Sodium (Na)-Dissolved	70.3		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	1.87		0.00020	mg/L	01-FEB-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	0.000133		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	0.0012		0.0010	mg/L	01-FEB-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	282		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.0		1.0	mg/L		03-FEB-19	R4484911
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	421		1.0	mg/L		03-FEB-19	R4484919
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-FEB-19	R4484919
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-FEB-19	R4484919

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226352-1 CM_MW5-DP_WG_2019-01-14_N Sampled By: SH/DS on 29-JAN-19 @ 13:55 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	421		1.0	mg/L		03-FEB-19	R4484919
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.633		0.010	mg/L		06-FEB-19	R4492170
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		30-JAN-19	R4479442
<b>Chloride in Water by IC</b>							
Chloride (Cl)	8.90		0.50	mg/L		30-JAN-19	R4479442
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	717		2.0	uS/cm		03-FEB-19	R4484919
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.298		0.020	mg/L		30-JAN-19	R4479442
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		04-FEB-19	
Anion Sum	8.76			meq/L		04-FEB-19	
Cation Sum	8.84			meq/L		04-FEB-19	
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		04-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-JAN-19	R4479442
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-JAN-19	R4479442
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation reduction potential by elect.</b>							
ORP	410		-1000	mV		30-JAN-19	R4478233
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0020		0.0020	mg/L		05-FEB-19	R4488988
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	3.78		0.30	mg/L		30-JAN-19	R4479442
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	391	DLHC	20	mg/L		01-FEB-19	R4486389
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.6		1.0	mg/L		01-FEB-19	R4486388
<b>Turbidity</b>							
Turbidity	17.1		0.10	NTU		30-JAN-19	R4477831
<b>pH</b>							
pH	8.21		0.10	pH		03-FEB-19	R4484919
L2226352-2 CM_MW5-SH_WG_2019-01-14_N Sampled By: SH/DS on 29-JAN-19 @ 13:54 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		02-FEB-19	R4484834
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-FEB-19	R4486753
Total Organic Carbon	<0.50		0.50	mg/L		02-FEB-19	R4484834
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	01-FEB-19	03-FEB-19	R4486228
Dissolved Metals Filtration Location	FIELD					01-FEB-19	R4483747
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	03-FEB-19	05-FEB-19	R4487809
Dissolved Mercury Filtration Location	FIELD					03-FEB-19	R4484946
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226352-2 CM_MW5-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 29-JAN-19 @ 13:54							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					01-FEB-19	R4483747
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	01-FEB-19	03-FEB-19	R4486228
Antimony (Sb)-Dissolved	0.00030		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Arsenic (As)-Dissolved	0.00022		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Barium (Ba)-Dissolved	0.120		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Boron (B)-Dissolved	0.045		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Cadmium (Cd)-Dissolved	0.0468		0.0050	ug/L	01-FEB-19	03-FEB-19	R4486228
Calcium (Ca)-Dissolved	190		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	01-FEB-19	03-FEB-19	R4486228
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Lithium (Li)-Dissolved	0.0272		0.0010	mg/L	01-FEB-19	03-FEB-19	R4486228
Magnesium (Mg)-Dissolved	88.2		0.10	mg/L	01-FEB-19	03-FEB-19	R4486228
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	01-FEB-19	03-FEB-19	R4486228
Molybdenum (Mo)-Dissolved	0.00341		0.000050	mg/L	01-FEB-19	03-FEB-19	R4486228
Nickel (Ni)-Dissolved	0.00097		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Potassium (K)-Dissolved	2.40		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Selenium (Se)-Dissolved	13.3		0.050	ug/L	01-FEB-19	03-FEB-19	R4486228
Silicon (Si)-Dissolved	2.55		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Sodium (Na)-Dissolved	19.7		0.050	mg/L	01-FEB-19	03-FEB-19	R4486228
Strontium (Sr)-Dissolved	0.574		0.00020	mg/L	01-FEB-19	03-FEB-19	R4486228
Thallium (Tl)-Dissolved	0.000063		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	01-FEB-19	03-FEB-19	R4486228
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	01-FEB-19	03-FEB-19	R4486228
Uranium (U)-Dissolved	0.00628		0.000010	mg/L	01-FEB-19	03-FEB-19	R4486228
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	01-FEB-19	03-FEB-19	R4486228
Zinc (Zn)-Dissolved	<0.0030	DLB	0.0030	mg/L	01-FEB-19	03-FEB-19	R4486228
<b>Hardness</b>							
Hardness (as CaCO3)	837		0.50	mg/L		04-FEB-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	11.4		1.0	mg/L		03-FEB-19	R4484911
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	262		1.0	mg/L		03-FEB-19	R4484919
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-FEB-19	R4484919
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-FEB-19	R4484919
Alkalinity, Total (as CaCO3)	262		1.0	mg/L		03-FEB-19	R4484919
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0098		0.0050	mg/L		06-FEB-19	R4492170
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		06-FEB-19	R4479442
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.49		0.50	mg/L		06-FEB-19	R4479442
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1440		2.0	uS/cm		03-FEB-19	R4484919
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.177		0.020	mg/L		06-FEB-19	R4479442
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2226352-2 CM_MW5-SH_WG_2019-01-14_N							
Sampled By: SH/DS on 29-JAN-19 @ 13:54							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	97.0		-100	%		06-FEB-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.5			%		06-FEB-19	
Anion Sum	18.2			meq/L		06-FEB-19	
Cation Sum	17.6			meq/L		06-FEB-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	4.78	HTD	0.0050	mg/L		06-FEB-19	R4479442
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010	HTD	0.0010	mg/L		06-FEB-19	R4479442
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0050		0.0010	mg/L		30-JAN-19	R4479453
<b>Oxidation redution potential by elect.</b>							
ORP	441		-1000	mV		30-JAN-19	R4478233
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0076		0.0020	mg/L		06-FEB-19	R4488988
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	595		0.50	mg/L		06-FEB-19	R4479442
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1180	DLHC	20	mg/L		01-FEB-19	R4486389
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		01-FEB-19	R4486388
<b>Turbidity</b>							
Turbidity	0.54		0.10	NTU		30-JAN-19	R4477831
<b>pH</b>							
pH	7.87		0.10	pH		03-FEB-19	R4484919

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric



# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
--------------	-------	-----------	--------------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

COC\_Q1\_WG\_01292019

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4484911							
<b>WG2982171-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			98.6		%		85-115	03-FEB-19
<b>WG2982171-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.9		mg/L		2	03-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4484919							
<b>WG2982170-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.9		%		85-115	03-FEB-19
<b>WG2982170-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4486228							
<b>WG2981700-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			101.9		%		80-120	03-FEB-19
<b>WG2981700-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4479442							
<b>WG2980556-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-JAN-19
<b>WG2980556-2</b>	<b>LCS</b>							
Bromide (Br)			102.5		%		85-115	30-JAN-19
<b>WG2980556-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-JAN-19
<b>WG2980556-4</b>	<b>MS</b>	<b>L2226352-1</b>						
Bromide (Br)			111.0		%		75-125	30-JAN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4484809							
<b>WG2982145-12</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.4		%		80-120	03-FEB-19
<b>WG2982145-11</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-FEB-19
Batch	R4484834							
<b>WG2982159-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			88.2		%		80-120	02-FEB-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4484834							
<b>WG2982159-6</b>	<b>LCS</b>							
Total Organic Carbon			96.0		%		80-120	02-FEB-19
<b>WG2982159-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	02-FEB-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4479442							
<b>WG2980556-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Chloride (Cl)		8.90	8.92		mg/L	0.2	20	30-JAN-19
<b>WG2980556-2</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	30-JAN-19
<b>WG2980556-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	30-JAN-19
<b>WG2980556-4</b>	<b>MS</b>	<b>L2226352-1</b>						
Chloride (Cl)			105.7		%		75-125	30-JAN-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4484919							
<b>WG2982170-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			96.8		%		90-110	03-FEB-19
<b>WG2982170-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-FEB-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4479442							
<b>WG2980556-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Fluoride (F)		0.298	0.299		mg/L	0.4	20	30-JAN-19
<b>WG2980556-2</b>	<b>LCS</b>							
Fluoride (F)			103.9		%		90-110	30-JAN-19
<b>WG2980556-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-JAN-19
<b>WG2980556-4</b>	<b>MS</b>	<b>L2226352-1</b>						
Fluoride (F)			103.5		%		75-125	30-JAN-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4487809							
<b>WG2982211-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-FEB-19
<b>WG2982211-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.3		%		80-120	05-FEB-19
<b>WG2982211-1</b>	<b>MB</b>	<b>NP</b>						



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4487809</b>							
<b>WG2982211-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-FEB-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4486228</b>							
<b>WG2981700-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.4		%		80-120	03-FEB-19
Antimony (Sb)-Dissolved			95.3		%		80-120	03-FEB-19
Arsenic (As)-Dissolved			96.4		%		80-120	03-FEB-19
Barium (Ba)-Dissolved			98.7		%		80-120	03-FEB-19
Bismuth (Bi)-Dissolved			95.3		%		80-120	03-FEB-19
Boron (B)-Dissolved			100.4		%		80-120	03-FEB-19
Cadmium (Cd)-Dissolved			91.9		%		80-120	03-FEB-19
Calcium (Ca)-Dissolved			99.5		%		80-120	03-FEB-19
Chromium (Cr)-Dissolved			98.8		%		80-120	03-FEB-19
Cobalt (Co)-Dissolved			97.9		%		80-120	03-FEB-19
Copper (Cu)-Dissolved			95.2		%		80-120	03-FEB-19
Iron (Fe)-Dissolved			91.9		%		80-120	03-FEB-19
Lead (Pb)-Dissolved			95.6		%		80-120	03-FEB-19
Lithium (Li)-Dissolved			97.5		%		80-120	03-FEB-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	03-FEB-19
Manganese (Mn)-Dissolved			101.0		%		80-120	03-FEB-19
Molybdenum (Mo)-Dissolved			96.2		%		80-120	03-FEB-19
Nickel (Ni)-Dissolved			95.8		%		80-120	03-FEB-19
Potassium (K)-Dissolved			98.4		%		80-120	03-FEB-19
Selenium (Se)-Dissolved			96.4		%		80-120	03-FEB-19
Silicon (Si)-Dissolved			100.2		%		60-140	03-FEB-19
Silver (Ag)-Dissolved			91.1		%		80-120	03-FEB-19
Sodium (Na)-Dissolved			102.6		%		80-120	03-FEB-19
Strontium (Sr)-Dissolved			94.9		%		80-120	03-FEB-19
Thallium (Tl)-Dissolved			94.2		%		80-120	03-FEB-19
Tin (Sn)-Dissolved			92.5		%		80-120	03-FEB-19
Titanium (Ti)-Dissolved			99.4		%		80-120	03-FEB-19
Uranium (U)-Dissolved			95.6		%		80-120	03-FEB-19
Vanadium (V)-Dissolved			99.4		%		80-120	03-FEB-19



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4486228</b>							
<b>WG2981700-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			93.4		%		80-120	03-FEB-19
<b>WG2981700-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-FEB-19
<b>NH3-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4492170							
<b>WG2984288-2</b>	<b>LCS</b>							
Ammonia as N			95.7		%		85-115	06-FEB-19
<b>WG2984288-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-FEB-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4479442							
<b>WG2980556-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	30-JAN-19
<b>WG2980556-2</b>	<b>LCS</b>							
Nitrite (as N)			106.7		%		90-110	30-JAN-19
<b>WG2980556-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-JAN-19
<b>WG2980556-4</b>	<b>MS</b>	<b>L2226352-1</b>						
Nitrite (as N)			108.8		%		75-125	30-JAN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4479442							
<b>WG2980556-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Nitrate (as N)		<0.0050	0.0051	RPD-NA	mg/L	N/A	20	30-JAN-19
<b>WG2980556-2</b>	<b>LCS</b>							
Nitrate (as N)			101.0		%		90-110	30-JAN-19
<b>WG2980556-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-JAN-19
<b>WG2980556-4</b>	<b>MS</b>	<b>L2226352-1</b>						
Nitrate (as N)			106.2		%		75-125	30-JAN-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4478233							
<b>WG2980097-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	30-JAN-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4488988							
<b>WG2983485-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			83.4		%		80-120	05-FEB-19
<b>WG2983485-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-FEB-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4484919							
WG2982170-5	LCS							
pH			7.05		pH		6.9-7.1	03-FEB-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4479453							
WG2980075-6	LCS							
Orthophosphate-Dissolved (as P)			102.4		%		80-120	30-JAN-19
WG2980075-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-JAN-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4479442							
WG2980556-3	DUP	L2226352-1						
Sulfate (SO4)		3.78	3.82		mg/L	1.2	20	30-JAN-19
WG2980556-2	LCS							
Sulfate (SO4)			100.8		%		90-110	30-JAN-19
WG2980556-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-JAN-19
WG2980556-4	MS	L2226352-1						
Sulfate (SO4)			103.9		%		75-125	30-JAN-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4486389							
WG2981648-2	LCS							
Total Dissolved Solids			96.4		%		85-115	01-FEB-19
WG2981648-1	MB							
Total Dissolved Solids			<10		mg/L		10	01-FEB-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4486753							
WG2980967-2	LCS							
Total Kjeldahl Nitrogen			93.0		%		75-125	04-FEB-19
WG2980967-6	LCS							
Total Kjeldahl Nitrogen			86.6		%		75-125	04-FEB-19
WG2980967-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-19
WG2980967-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-FEB-19
<b>TSS-L-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4486388</b>							
<b>WG2981344-4</b>	<b>LCS</b>							
Total Suspended Solids			95.6		%		85-115	01-FEB-19
<b>WG2981344-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-FEB-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4477831</b>							
<b>WG2980013-3</b>	<b>DUP</b>	<b>L2226352-1</b>						
Turbidity		17.1	16.9		NTU	1.2	15	30-JAN-19
<b>WG2980013-2</b>	<b>LCS</b>							
Turbidity			98.0		%		85-115	30-JAN-19
<b>WG2980013-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-JAN-19



# Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2226352

Report Date: 06-FEB-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	29-JAN-19 13:55	30-JAN-19 15:40	0.25	26	hours	EHTR-FM
	2	29-JAN-19 13:54	30-JAN-19 15:40	0.25	26	hours	EHTR-FM
pH	1	29-JAN-19 13:55	03-FEB-19 10:00	0.25	116	hours	EHTR-FM
	2	29-JAN-19 13:54	03-FEB-19 10:00	0.25	116	hours	EHTR-FM
<b>Anions and Nutrients</b>							
Nitrate in Water by IC (Low Level)	2	29-JAN-19 13:54	06-FEB-19 09:59	3	8	days	EHT
Nitrite in Water by IC (Low Level)	2	29-JAN-19 13:54	06-FEB-19 09:59	3	8	days	EHT

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2226352 were received on 30-JAN-19 09:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>COC_Q1_WG_01292019</b>		TURNAROUND TIME: Regular		RUSH: No						
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>		<b>OTHER INFO</b>				
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary		Report Format / Distribution				
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets		Email 1:	Scott.Holmgren@teck.co	Excel <input checked="" type="checkbox"/>	PDF <input checked="" type="checkbox"/>	EDD <input checked="" type="checkbox"/>
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.co			<input checked="" type="checkbox"/>
Address PO Box 3000				Address 2559 29th St. NE		Email 3:	Don.Sacino@teck.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
City Sparwood		Province BC	City Calgary		Province AB	Email 4:	Jay.jones@teck.com	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5		Country Canada	PO number		<b>611069</b>		
Phone Number 1-250-425-7321		Phone Number 403 407 1800								

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_MWS-DP_WG_2019-01-14_N	CM_MWS-DP	WG	No	1/29/2019	13:55	G	5	1	1	1	1	1								
CM_MWS-SH_WG_2019-01-14_N	CM_MWS-SH	WG	No	1/29/2019	15:54	G	5	1	1	1	1	1								

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME	
						DK		2019/01/30 09/10	

SERVICE REQUEST (rush - subject to availability)		Regular (default) <input checked="" type="checkbox"/>		Priority (2-3 business days) - 50% surcharge		Emergency (1 Business Day) - 100% surcharge		For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name		SH/DS		Mobile #		250 425 7518			
Sampler's Signature				Date/Time		January 29, 2019			

7°C



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 04-JUN-19  
Report Date: 12-JUN-19 19:12 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2284893  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q2\_20190603  
Legal Site Desc:

Comments: Due to Dissolved Metals sample 2284893-1 being preserved with wrong preservative (Sulfur > 1600 ppm); an analysis was performed on RAW cut filtered and preserved at the lab.

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2284893-1 CM_MW6-DP_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 03-JUN-19 @ 15:27							
Matrix: WS							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.54	DTC	0.50	mg/L		12-JUN-19	R4661849
Total Kjeldahl Nitrogen	0.383		0.050	mg/L		11-JUN-19	R4662410
Total Organic Carbon	1.06	DTC	0.50	mg/L		07-JUN-19	R4661849
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	09-JUN-19	09-JUN-19	R4662987
Dissolved Metals Filtration Location	LAB					09-JUN-19	R4662133
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662529
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	LAB					09-JUN-19	R4662133
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	09-JUN-19	09-JUN-19	R4662987
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Arsenic (As)-Dissolved	0.00020		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Barium (Ba)-Dissolved	0.301		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-19	09-JUN-19	R4662987
Boron (B)-Dissolved	0.284		0.010	mg/L	09-JUN-19	09-JUN-19	R4662987
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	09-JUN-19	09-JUN-19	R4662987
Calcium (Ca)-Dissolved	9.45		0.050	mg/L	09-JUN-19	09-JUN-19	R4662987
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	09-JUN-19	09-JUN-19	R4662987
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-19	09-JUN-19	R4662987
Iron (Fe)-Dissolved	0.011		0.010	mg/L	09-JUN-19	09-JUN-19	R4662987
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	09-JUN-19	09-JUN-19	R4662987
Lithium (Li)-Dissolved	0.360		0.0010	mg/L	09-JUN-19	09-JUN-19	R4662987
Magnesium (Mg)-Dissolved	3.29		0.10	mg/L	09-JUN-19	09-JUN-19	R4662987
Manganese (Mn)-Dissolved	0.0403		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Molybdenum (Mo)-Dissolved	0.00341		0.000050	mg/L	09-JUN-19	09-JUN-19	R4662987
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-19	09-JUN-19	R4662987
Potassium (K)-Dissolved	1.92		0.050	mg/L	09-JUN-19	09-JUN-19	R4662987
Selenium (Se)-Dissolved	0.139		0.050	ug/L	09-JUN-19	09-JUN-19	R4662987
Silicon (Si)-Dissolved	4.02		0.050	mg/L	09-JUN-19	09-JUN-19	R4662987
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-19	09-JUN-19	R4662987
Sodium (Na)-Dissolved	287		0.050	mg/L	09-JUN-19	09-JUN-19	R4662987
Strontium (Sr)-Dissolved	0.844		0.00020	mg/L	09-JUN-19	09-JUN-19	R4662987
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	09-JUN-19	09-JUN-19	R4662987
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	09-JUN-19	09-JUN-19	R4662987
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	09-JUN-19	09-JUN-19	R4662987
Uranium (U)-Dissolved	0.000571		0.000010	mg/L	09-JUN-19	09-JUN-19	R4662987
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	09-JUN-19	09-JUN-19	R4662987
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	09-JUN-19	09-JUN-19	R4662987
<b>Hardness</b>							
Hardness (as CaCO3)	37.2		0.50	mg/L		10-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	550		1.0	mg/L		11-JUN-19	R4663868
Alkalinity, Carbonate (as CaCO3)	51.0		1.0	mg/L		11-JUN-19	R4663868
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4663868

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2284893-1 CM_MW6-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 03-JUN-19 @ 15:27 Matrix: WS							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	601		1.0	mg/L		11-JUN-19	R4663868
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.368		0.0050	mg/L		10-JUN-19	R4663746
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		05-JUN-19	R4660441
<b>Chloride in Water by IC</b>							
Chloride (Cl)	37.6	DLHC	2.5	mg/L		05-JUN-19	R4660441
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1170		2.0	uS/cm		11-JUN-19	R4663868
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.48	DLHC	0.10	mg/L		05-JUN-19	R4660441
<b>Ion Balance Calculation</b>							
Ion Balance	99.2		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.4			%		12-JUN-19	
Anion Sum	13.4			meq/L		12-JUN-19	
Cation Sum	13.3			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.191	DLHC	0.025	mg/L		05-JUN-19	R4660441
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		05-JUN-19	R4660441
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-19	R4660176
<b>Oxidation reduction potential by elect.</b>							
ORP	410		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0096		0.0020	mg/L		08-JUN-19	R4661866
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	13.3	DLHC	1.5	mg/L		05-JUN-19	R4660441
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	676	DLHC	20	mg/L		06-JUN-19	R4661605
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.9		1.0	mg/L		06-JUN-19	R4661216
<b>Turbidity</b>							
Turbidity	0.66		0.10	NTU		05-JUN-19	R4659803
<b>pH</b>							
pH	8.75		0.10	pH		11-JUN-19	R4663868
L2284893-2 CM_MW6-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 03-JUN-19 @ 15:08 Matrix: WS							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.55		0.50	mg/L		07-JUN-19	R4661849
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		07-JUN-19	R4662410
Total Organic Carbon	2.29		0.50	mg/L		07-JUN-19	R4661849
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	06-JUN-19	R4660531
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660067
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	10-JUN-19	R4663078
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662529
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2284893-2 CM_MW6-SH_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 03-JUN-19 @ 15:08							
Matrix: WS							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660067
Aluminum (Al)-Dissolved	0.0032		0.0030	mg/L	06-JUN-19	06-JUN-19	R4660531
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	06-JUN-19	R4660531
Arsenic (As)-Dissolved	0.00112		0.00010	mg/L	06-JUN-19	06-JUN-19	R4660531
Barium (Ba)-Dissolved	0.139		0.00010	mg/L	06-JUN-19	06-JUN-19	R4660531
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	06-JUN-19	R4660531
Boron (B)-Dissolved	0.037		0.010	mg/L	06-JUN-19	06-JUN-19	R4660531
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-JUN-19	06-JUN-19	R4660531
Calcium (Ca)-Dissolved	19.9		0.050	mg/L	06-JUN-19	06-JUN-19	R4660531
Chromium (Cr)-Dissolved	0.00214		0.00010	mg/L	06-JUN-19	06-JUN-19	R4660531
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	06-JUN-19	06-JUN-19	R4660531
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	06-JUN-19	R4660531
Iron (Fe)-Dissolved	0.391		0.010	mg/L	06-JUN-19	06-JUN-19	R4660531
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	06-JUN-19	R4660531
Lithium (Li)-Dissolved	0.0341		0.0010	mg/L	06-JUN-19	06-JUN-19	R4660531
Magnesium (Mg)-Dissolved	7.51		0.10	mg/L	06-JUN-19	06-JUN-19	R4660531
Manganese (Mn)-Dissolved	0.248		0.00010	mg/L	06-JUN-19	06-JUN-19	R4660531
Molybdenum (Mo)-Dissolved	0.0108		0.000050	mg/L	06-JUN-19	06-JUN-19	R4660531
Nickel (Ni)-Dissolved	0.00079		0.00050	mg/L	06-JUN-19	06-JUN-19	R4660531
Potassium (K)-Dissolved	0.367		0.050	mg/L	06-JUN-19	06-JUN-19	R4660531
Selenium (Se)-Dissolved	0.204		0.050	ug/L	06-JUN-19	06-JUN-19	R4660531
Silicon (Si)-Dissolved	3.42		0.050	mg/L	06-JUN-19	06-JUN-19	R4660531
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	06-JUN-19	R4660531
Sodium (Na)-Dissolved	70.5		0.050	mg/L	06-JUN-19	06-JUN-19	R4660531
Strontium (Sr)-Dissolved	0.209		0.00020	mg/L	06-JUN-19	06-JUN-19	R4660531
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	06-JUN-19	R4660531
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	06-JUN-19	06-JUN-19	R4660531
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	06-JUN-19	06-JUN-19	R4660531
Uranium (U)-Dissolved	0.000524		0.000010	mg/L	06-JUN-19	06-JUN-19	R4660531
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	06-JUN-19	R4660531
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-JUN-19	06-JUN-19	R4660531
<b>Hardness</b>							
Hardness (as CaCO3)	80.5		0.50	mg/L		06-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	198		1.0	mg/L		10-JUN-19	R4663608
Alkalinity, Carbonate (as CaCO3)	6.2		1.0	mg/L		10-JUN-19	R4663608
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663608
Alkalinity, Total (as CaCO3)	205		1.0	mg/L		10-JUN-19	R4663608
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0279		0.0050	mg/L		10-JUN-19	R4663746
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.088		0.050	mg/L		05-JUN-19	R4660441
<b>Chloride in Water by IC</b>							
Chloride (Cl)	18.5		0.50	mg/L		05-JUN-19	R4660441
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	453		2.0	uS/cm		10-JUN-19	R4663608
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.57		0.020	mg/L		05-JUN-19	R4660441
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2284893-2 CM_MW6-SH_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 03-JUN-19 @ 15:08							
Matrix: WS							
<b>Ion Balance Calculation</b>							
Ion Balance	98.1		-100	%		11-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.9			%		11-JUN-19	
Anion Sum	4.81			meq/L		11-JUN-19	
Cation Sum	4.72			meq/L		11-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		05-JUN-19	R4660441
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		05-JUN-19	R4660441
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		05-JUN-19	R4660176
<b>Oxidation redution potential by elect.</b>							
ORP	231		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0047		0.0020	mg/L		08-JUN-19	R4661866
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	5.61		0.30	mg/L		05-JUN-19	R4660441
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	239	DLHC	20	mg/L		06-JUN-19	R4661605
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.2		1.0	mg/L		06-JUN-19	R4661216
<b>Turbidity</b>							
Turbidity	3.88		0.10	NTU		05-JUN-19	R4659803
<b>pH</b>							
pH	8.38		0.10	pH		10-JUN-19	R4663608

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q2\_20190603

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 1 of 11

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663639</b>							
<b>WG3073547-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.2		%		85-115	10-JUN-19
<b>WG3073547-4</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	10-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663608</b>							
<b>WG3073486-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.8		%		85-115	10-JUN-19
<b>WG3073486-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-JUN-19
<b>Batch</b>	<b>R4663868</b>							
<b>WG3074170-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.2		%		85-115	11-JUN-19
<b>WG3074170-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660531</b>							
<b>WG3069460-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.3		%		80-120	06-JUN-19
<b>WG3069460-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-JUN-19
<b>Batch</b>	<b>R4662987</b>							
<b>WG3071987-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.6		%		80-120	09-JUN-19
<b>WG3071987-1</b>	<b>MB</b>	<b>LF</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660441</b>							
<b>WG3069844-10</b>	<b>LCS</b>							
Bromide (Br)			106.2		%		85-115	05-JUN-19
<b>WG3069844-6</b>	<b>LCS</b>							
Bromide (Br)			101.4		%		85-115	05-JUN-19
<b>WG3069844-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-JUN-19
<b>WG3069844-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4660441</b>							
<b>WG3069844-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-JUN-19
<b>WG3069844-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-JUN-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4663078</b>							
<b>WG3072547-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.9		%		80-120	10-JUN-19
<b>WG3072547-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	10-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4660531</b>							
<b>WG3069460-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.9		%		80-120	06-JUN-19
Antimony (Sb)-Dissolved			97.2		%		80-120	06-JUN-19
Arsenic (As)-Dissolved			99.7		%		80-120	06-JUN-19
Barium (Ba)-Dissolved			101.3		%		80-120	06-JUN-19
Bismuth (Bi)-Dissolved			99.3		%		80-120	06-JUN-19
Boron (B)-Dissolved			95.1		%		80-120	06-JUN-19
Cadmium (Cd)-Dissolved			99.0		%		80-120	06-JUN-19
Calcium (Ca)-Dissolved			97.4		%		80-120	06-JUN-19
Chromium (Cr)-Dissolved			99.5		%		80-120	06-JUN-19
Cobalt (Co)-Dissolved			98.8		%		80-120	06-JUN-19
Copper (Cu)-Dissolved			97.0		%		80-120	06-JUN-19
Iron (Fe)-Dissolved			96.8		%		80-120	06-JUN-19
Lead (Pb)-Dissolved			100.2		%		80-120	06-JUN-19
Lithium (Li)-Dissolved			98.5		%		80-120	06-JUN-19
Magnesium (Mg)-Dissolved			102.6		%		80-120	06-JUN-19
Manganese (Mn)-Dissolved			100.8		%		80-120	06-JUN-19
Molybdenum (Mo)-Dissolved			101.1		%		80-120	06-JUN-19
Nickel (Ni)-Dissolved			100.1		%		80-120	06-JUN-19
Potassium (K)-Dissolved			103.5		%		80-120	06-JUN-19
Selenium (Se)-Dissolved			100.7		%		80-120	06-JUN-19
Silicon (Si)-Dissolved			107.2		%		60-140	06-JUN-19
Silver (Ag)-Dissolved			95.2		%		80-120	06-JUN-19
Sodium (Na)-Dissolved			106.3		%		80-120	06-JUN-19



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660531</b>							
<b>WG3069460-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			107.3		%		80-120	06-JUN-19
Thallium (Tl)-Dissolved			103.0		%		80-120	06-JUN-19
Tin (Sn)-Dissolved			98.9		%		80-120	06-JUN-19
Titanium (Ti)-Dissolved			96.3		%		80-120	06-JUN-19
Uranium (U)-Dissolved			96.2		%		80-120	06-JUN-19
Vanadium (V)-Dissolved			100.6		%		80-120	06-JUN-19
Zinc (Zn)-Dissolved			105.5		%		80-120	06-JUN-19
<b>WG3069460-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-JUN-19



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4660531</b>							
<b>WG3069460-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-JUN-19
<b>Batch</b>	<b>R4662987</b>							
<b>WG3071987-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.0		%		80-120	09-JUN-19
Antimony (Sb)-Dissolved			99.7		%		80-120	09-JUN-19
Arsenic (As)-Dissolved			101.2		%		80-120	09-JUN-19
Barium (Ba)-Dissolved			104.4		%		80-120	09-JUN-19
Bismuth (Bi)-Dissolved			97.7		%		80-120	09-JUN-19
Boron (B)-Dissolved			93.8		%		80-120	09-JUN-19
Cadmium (Cd)-Dissolved			104.0		%		80-120	09-JUN-19
Calcium (Ca)-Dissolved			103.8		%		80-120	09-JUN-19
Chromium (Cr)-Dissolved			103.1		%		80-120	09-JUN-19
Cobalt (Co)-Dissolved			102.9		%		80-120	09-JUN-19
Copper (Cu)-Dissolved			100.9		%		80-120	09-JUN-19
Iron (Fe)-Dissolved			105.9		%		80-120	09-JUN-19
Lead (Pb)-Dissolved			99.5		%		80-120	09-JUN-19
Lithium (Li)-Dissolved			100.8		%		80-120	09-JUN-19
Magnesium (Mg)-Dissolved			102.0		%		80-120	09-JUN-19
Manganese (Mn)-Dissolved			101.7		%		80-120	09-JUN-19
Molybdenum (Mo)-Dissolved			101.2		%		80-120	09-JUN-19
Nickel (Ni)-Dissolved			102.3		%		80-120	09-JUN-19
Potassium (K)-Dissolved			108.9		%		80-120	09-JUN-19
Selenium (Se)-Dissolved			101.8		%		80-120	09-JUN-19
Silicon (Si)-Dissolved			108.4		%		60-140	09-JUN-19
Silver (Ag)-Dissolved			98.7		%		80-120	09-JUN-19
Sodium (Na)-Dissolved			105.5		%		80-120	09-JUN-19
Strontium (Sr)-Dissolved			99.0		%		80-120	09-JUN-19
Thallium (Tl)-Dissolved			97.5		%		80-120	09-JUN-19
Tin (Sn)-Dissolved			100.2		%		80-120	09-JUN-19
Titanium (Ti)-Dissolved			102.9		%		80-120	09-JUN-19
Uranium (U)-Dissolved			99.0		%		80-120	09-JUN-19





## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662987</b>							
<b>WG3071987-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			105.0		%		80-120	09-JUN-19
Zinc (Zn)-Dissolved			102.2		%		80-120	09-JUN-19
<b>WG3071987-1</b>	<b>MB</b>	<b>LF</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-JUN-19

**NH3-L-F-CL**

**Water**



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4663746								
WG3073877-6 LCS								
Ammonia as N			100.4		%		85-115	10-JUN-19
WG3073877-5 MB								
Ammonia as N			<0.0050		mg/L		0.005	10-JUN-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4660441								
WG3069844-10 LCS								
Nitrite (as N)			103.6		%		90-110	05-JUN-19
WG3069844-6 LCS								
Nitrite (as N)			102.2		%		90-110	05-JUN-19
WG3069844-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	05-JUN-19
WG3069844-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	05-JUN-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4660441								
WG3069844-10 LCS								
Nitrate (as N)			102.7		%		90-110	05-JUN-19
WG3069844-6 LCS								
Nitrate (as N)			100.9		%		90-110	05-JUN-19
WG3069844-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	05-JUN-19
WG3069844-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	05-JUN-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4663272								
WG3073457-5 CRM								
ORP		CL-ORP	221		mV		210-230	10-JUN-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R4661866								
WG3071733-10 LCS								
Phosphorus (P)-Total			104.3		%		80-120	08-JUN-19
WG3071733-9 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	08-JUN-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4663608							
WG3073486-11	LCS							
pH			7.00		pH		6.9-7.1	10-JUN-19
Batch	R4663868							
WG3074170-2	LCS							
pH			6.98		pH		6.9-7.1	11-JUN-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
Batch	R4660176							
WG3068707-16	LCS							
Orthophosphate-Dissolved (as P)			101.0		%		80-120	05-JUN-19
WG3068707-4	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-JUN-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
Batch	R4660441							
WG3069844-10	LCS							
Sulfate (SO4)			103.1		%		90-110	05-JUN-19
WG3069844-6	LCS							
Sulfate (SO4)			101.3		%		90-110	05-JUN-19
WG3069844-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-JUN-19
WG3069844-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	05-JUN-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4661605							
WG3069450-14	LCS							
Total Dissolved Solids			94.7		%		85-115	06-JUN-19
WG3069450-13	MB							
Total Dissolved Solids			<10		mg/L		10	06-JUN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4662410							
WG3072380-10	LCS							
Total Kjeldahl Nitrogen			92.4		%		75-125	07-JUN-19
WG3072380-2	LCS							
Total Kjeldahl Nitrogen			92.5		%		75-125	07-JUN-19
WG3072380-6	LCS							
Total Kjeldahl Nitrogen			92.6		%		75-125	07-JUN-19
WG3072380-1	MB							



## Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662410</b>							
<b>WG3072380-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3072380-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>WG3072380-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-JUN-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661216</b>							
<b>WG3069523-14</b>	<b>LCS</b>							
Total Suspended Solids			109.2		%		85-115	06-JUN-19
<b>WG3069523-13</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	06-JUN-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4659803</b>							
<b>WG3069201-12</b>	<b>DUP</b>	<b>L2284893-2</b>						
Turbidity		3.88	3.76		NTU	3.1	15	05-JUN-19
<b>WG3069201-11</b>	<b>LCS</b>							
Turbidity			95.0		%		85-115	05-JUN-19
<b>WG3069201-8</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	05-JUN-19
<b>WG3069201-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-JUN-19
<b>WG3069201-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	05-JUN-19

# Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2284893

Report Date: 12-JUN-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	03-JUN-19 15:27	10-JUN-19 08:20	0.25	161	hours	EHTR-FM
	2	03-JUN-19 15:08	10-JUN-19 08:20	0.25	161	hours	EHTR-FM
pH	1	03-JUN-19 15:27	11-JUN-19 10:00	0.25	186	hours	EHTR-FM
	2	03-JUN-19 15:08	10-JUN-19 16:00	0.25	169	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).



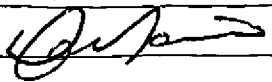
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2284893 were received on 04-JUN-19 09:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

PROJECT/CLIENT INFO		LABORATORY		OTHER INFO														
COC ID: <b>COC_WG_Q2_20190603</b>		TURNAROUND TIME: <b>Regular</b>		RUSH: <b>No</b>														
Facility Name / Job#: Coal Mountain Operations		Lab Name: ALS Calgary		Report Format / Distribution														
Project Manager: Jay Jones		Lab Contact: Lyudmyla Shvets		Email 1:	Scott.Holmgren@teck.co	X X X												
Email: Jay.Jones@teck.com		Email: Lyudmyla.Shvets@alsglobal.com		Email 2:	teckcoal@equisonline.co	X X X												
Address: PO Box 3000		Address: 2559 29th St. NE		Email 3:	Jay.jones@teck.com	X X X												
City: Sparwood	Province: BC	City: Calgary	Province: AB	Email 4:	Don.Sacino@teck.com	X X X												
Postal Code: V0B 2G0	Country: Canada	Postal Code: T1Y 7B5	Country: Canada	Email 5:	Kate.Middleton@teck.co	X X X												
Phone Number: 1-250-425-7321		Phone Number: 403 407 1800		PO number:	<b>611069</b>													
SAMPLE DETAILS				ANALYSIS REQUESTED														
 L2284893-COFC	Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	Filtered: F: Field, L: Lab, FL: Field & Lab, N: None									
									ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
CM_MW6-DP_WG_2019-04-08_N	CM_MW6-DP	WG	No	2019/06/03	15:27	G	5		F	N	F	F	N					
CM_MW6-SH_WG_2019-04-08_N	CM_MW6-SH	WG	No	2019/06/03	15:08	G	5		F	N	F	F	N					
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS				RELINQUISHED BY/AFFILIATION				DATE/TIME		ACCEPTED BY/AFFILIATION		DATE/TIME						
												6/4 9:35						
SERVICE REQUEST (rush - subject to availability)																		
Regular (default) X				Sampler's Name				DS/KP/MC		Mobile #		250 425 7518						
Priority (2-3 business days) - 50% surcharge				Sampler's Signature						Date/Time		June 3, 2019 - 17:00						
Emergency (1 Business Day) - 100% surcharge																		
For Emergency <1 Day, ASAP or Weekend - Contact ALS																		

10c



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 05-JUN-19  
Report Date: 17-JUN-19 10:06 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2285857  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q2\_20190604  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-1 CM_MW1-OB_WG_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 14:39							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.190		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.0651		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.028		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	0.0714		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	155		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	0.00034		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	0.00075		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	0.000067		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0174		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	49.3		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.00036		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.000234		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	0.00075		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	1.81		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	3.82		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	3.21		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	56.5		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.367		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	0.000019		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.00126		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0165		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	589		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.9		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	244		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-1 CM_MW1-OB_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 14:39 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	244		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0116		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	111	DLHC	2.5	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		12-JUN-19	
Anion Sum	14.2			meq/L		12-JUN-19	
Cation Sum	14.3			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.970	DLHC	0.025	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0030		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation reduction potential by elect.</b>							
ORP	473		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0034		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	292	DLHC	1.5	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	805	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.2		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b>							
Turbidity	1.08		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.20		0.10	pH		11-JUN-19	R4665400
L2285857-2 CM_MW1-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 15:02 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.58		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.173		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	0.54		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-2 CM_MW1-SH_WG_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 15:02							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	0.0031		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00191		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.313		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.052		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	30.8		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	0.600		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0171		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	12.1		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.163		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.0480		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	1.21		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	3.95		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	0.000016		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	167		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.292		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	0.00012		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.000881		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	127		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	193		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	10.6		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0559		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.747		0.050	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	181		0.50	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1010		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.816		0.020	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-2 CM_MW1-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 15:02 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	104		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.1			%		12-JUN-19	
Anion Sum	9.45			meq/L		12-JUN-19	
Cation Sum	9.86			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	319		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0119		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	11.1		0.30	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	486	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.6		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b>							
Turbidity	9.92		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.42		0.10	pH		11-JUN-19	R4665400
L2285857-3 CM_MW2-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:57 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.17		0.50	mg/L		10-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.125		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	0.83		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.117		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.038		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	0.139		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	210		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	0.00020		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-3 CM_MW2-SH_WG_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 12:57							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00068		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	0.000199		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0272		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	57.9		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.00016		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.000156		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	0.00080		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	1.54		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	0.232		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	5.15		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	18.6		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.583		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	0.00018		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.000206		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0028		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	762		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12.5		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	294		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	294		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0143		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	3.8	DLHC	2.5	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1300		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.4			%		12-JUN-19	
Anion Sum	15.9			meq/L		12-JUN-19	
Cation Sum	16.1			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.120	DLHC	0.025	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0018		0.0010	mg/L		06-JUN-19	R4661287

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-3 CM_MW2-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:57 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	414		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0040		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b> Sulfate (SO4)	478	DLHC	1.5	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b> Total Dissolved Solids	937	DLHC	27	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b> Total Suspended Solids	1.2		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b> Turbidity	3.03		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	8.13		0.10	pH		11-JUN-19	R4665400
L2285857-4 CM_MW3-DP_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 11:28 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.623		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	0.0067		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00087		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.758		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.486		0.020	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	12.6		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	0.043		0.020	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	1.19		0.0020	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	4.95		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.0420		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.00254		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	0.0036		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	2.41		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	3.70		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-JUN-19	07-JUN-19	R4661570

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-4 CM_MW3-DP_WG_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 11:28							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	570		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	1.06		0.00040	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.000461		0.000020	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0022		0.0020	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	51.8		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	200		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	10.2		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	211		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.561		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	2.57	DLHC	0.25	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	749	DLHC	2.5	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2810		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.46	DLHC	0.10	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Ion Balance	102		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.1			%		12-JUN-19	
Anion Sum	25.3			meq/L		12-JUN-19	
Cation Sum	25.9			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.040	DLHC	0.025	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	345		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0089		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1340	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.7		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b>							
Turbidity	1.12		0.10	NTU		07-JUN-19	R4661885

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-4 CM_MW3-DP_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 11:28 Matrix: WG							
<b>pH</b> pH	8.42		0.10	pH		11-JUN-19	R4665400
L2285857-5 CM_MW3-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 11:40 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.10		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	0.99		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.0772		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.019		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	0.0055		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	48.6		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	0.00018		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	0.00128		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	0.000056		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0072		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	12.4		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.00025		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.000606		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	0.643		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	0.263		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	2.54		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	3.91		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.257		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	0.00024		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.000205		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0142		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	172		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-5 CM_MW3-SH_WG_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 11:40 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	162		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	8.6		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	171		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0281		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	0.94		0.50	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	338		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.097		0.020	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Ion Balance	96.4		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.8			%		12-JUN-19	
Anion Sum	3.77			meq/L		12-JUN-19	
Cation Sum	3.63			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0133		0.0050	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	467		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0034		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	15.6		0.30	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	185	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b>							
Turbidity	0.49		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.37		0.10	pH		11-JUN-19	R4665400
L2285857-6 CM_NNP_WS_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.313		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-6 CM_NNP_WS_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 12:00							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	0.0032		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.0647		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.028		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	0.0824		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	152		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	0.00032		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	0.00065		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	0.000059		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0175		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	49.5		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.00028		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.000229		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	0.00063		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	1.80		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	3.73		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	3.33		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	57.6		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.362		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	0.000023		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.00126		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0150		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	582		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.7		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	242		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	242		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0225		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	112	DLHC	2.5	mg/L		07-JUN-19	R4661856

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-6 CM_NNP_WS_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:00 Matrix: WG							
<b>Electrical Conductivity (EC)</b> Conductivity (@ 25C)	1280		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b> Fluoride (F)	<0.10	DLHC	0.10	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b> Ion Balance	102		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b> Cation - Anion Balance	0.9			%		12-JUN-19	
Anion Sum	13.9			meq/L		12-JUN-19	
Cation Sum	14.2			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	0.913	DLHC	0.025	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0028		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b> ORP	440		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0030		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b> Sulfate (SO4)	283	DLHC	1.5	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b> Total Dissolved Solids	813	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b> Turbidity	0.51		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	8.22		0.10	pH		11-JUN-19	R4665400
L2285857-7 CM_NNP2_WS_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.11		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.124		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	0.99		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	0.0786		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	0.017		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-7 CM_NNP2_WS_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	0.0060		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	50.1		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	0.00015		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	0.00129		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	0.000058		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	0.0069		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	12.2		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	0.00026		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	0.000638		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Potassium (K)-Dissolved	0.646		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	0.252		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	2.53		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	3.71		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	0.263		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	0.00027		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	0.000201		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	0.0143		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	175		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	162		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	7.8		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	170		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0115		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.00		0.50	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	342		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.095		0.020	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.2			%		12-JUN-19	
Anion Sum	3.77			meq/L		12-JUN-19	
Cation Sum	3.68			meq/L		12-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	97.7		-100	%		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0249		0.0050	mg/L		07-JUN-19	R4661856

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-7 CM_NNP2_WS_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:00 Matrix: WG							
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	0.0028		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b> ORP	445		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0033		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b> Sulfate (SO4)	16.0		0.30	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b> Total Dissolved Solids	182	DLHC	20	mg/L		10-JUN-19	R4663874
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b> Turbidity	0.47		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	8.35		0.10	pH		11-JUN-19	R4665400
L2285857-8 CM_TRP_WS_2019-04-08_N Sampled By: DS/JDW on 04-JUN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
Total Kjeldahl Nitrogen	0.202		0.050	mg/L		12-JUN-19	R4665759
Total Organic Carbon	<0.50		0.50	mg/L		08-JUN-19	R4662382
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-JUN-19	07-JUN-19	R4661570
Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-JUN-19	11-JUN-19	R4663363
Dissolved Mercury Filtration Location	FIELD					10-JUN-19	R4662633
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					06-JUN-19	R4660603
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-JUN-19	07-JUN-19	R4661570
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Boron (B)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-JUN-19	07-JUN-19	R4661570
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-JUN-19	07-JUN-19	R4661570
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	06-JUN-19	07-JUN-19	R4661570
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	06-JUN-19	07-JUN-19	R4661570
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-8 CM_TRP_WS_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Potassium (K)-Dissolved	<0.050		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-JUN-19	07-JUN-19	R4661570
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	06-JUN-19	07-JUN-19	R4661570
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	06-JUN-19	07-JUN-19	R4661570
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-JUN-19	07-JUN-19	R4661570
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-JUN-19	07-JUN-19	R4661570
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	06-JUN-19	07-JUN-19	R4661570
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-JUN-19	07-JUN-19	R4661570
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-JUN-19	07-JUN-19	R4661570
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		07-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.1		1.0	mg/L		10-JUN-19	R4663639
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		11-JUN-19	R4665400
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.142		0.0050	mg/L		10-JUN-19	R4663733
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4661856
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		07-JUN-19	R4661856
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		11-JUN-19	R4665400
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		07-JUN-19	R4661856
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		12-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		12-JUN-19	
Anion Sum	<0.10			meq/L		12-JUN-19	
Cation Sum	<0.10			meq/L		12-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-JUN-19	R4661856
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4661856
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		06-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	428		-1000	mV		10-JUN-19	R4663272
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		10-JUN-19	R4663352
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		07-JUN-19	R4661856
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		10-JUN-19	R4663874

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2285857-8 CM_TRP_WS_2019-04-08_N							
Sampled By: DS/JDW on 04-JUN-19 @ 12:00							
Matrix: WG							
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		08-JUN-19	R4662474
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	5.51		0.10	pH		11-JUN-19	R4665400

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Qualifiers for Sample Submission Listed:

Qualifier	Description
EXTEMP10	12C - Samples Received with temperature >10 Degrees C

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q2\_20190604

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 1 of 12

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663639</b>							
<b>WG3073547-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	10-JUN-19
<b>WG3073547-13</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	10-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4665400</b>							
<b>WG3075139-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.3		%		85-115	11-JUN-19
<b>WG3075139-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661570</b>							
<b>WG3070049-3</b>	<b>DUP</b>	<b>L2285857-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3070049-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.8		%		80-120	07-JUN-19
<b>WG3070049-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	07-JUN-19
<b>WG3070049-4</b>	<b>MS</b>	<b>L2285857-1</b>						
Beryllium (Be)-Dissolved			95.7		%		70-130	07-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661856</b>							
<b>WG3071718-7</b>	<b>DUP</b>	<b>L2285857-8</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3071718-2</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	07-JUN-19
<b>WG3071718-6</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	07-JUN-19
<b>WG3071718-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>WG3071718-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>WG3071718-8</b>	<b>MS</b>	<b>L2285857-8</b>						
Bromide (Br)			100.1		%		75-125	07-JUN-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662382</b>							
<b>WG3072304-7</b>	<b>DUP</b>	<b>L2285857-7</b>						
Dissolved Organic Carbon		1.11	1.15		mg/L	3.3	20	08-JUN-19
<b>WG3072304-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			110.5		%		80-120	08-JUN-19
<b>WG3072304-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.5		%		80-120	08-JUN-19
<b>WG3072304-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>WG3072304-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>WG3072304-8</b>	<b>MS</b>	<b>L2285857-8</b>						
Dissolved Organic Carbon			83.0		%		70-130	08-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662382</b>							
<b>WG3072304-7</b>	<b>DUP</b>	<b>L2285857-7</b>						
Total Organic Carbon		0.99	0.99		mg/L	0.9	20	08-JUN-19
<b>WG3072304-10</b>	<b>LCS</b>							
Total Organic Carbon			96.1		%		80-120	08-JUN-19
<b>WG3072304-6</b>	<b>LCS</b>							
Total Organic Carbon			112.3		%		80-120	08-JUN-19
<b>WG3072304-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>WG3072304-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-JUN-19
<b>WG3072304-8</b>	<b>MS</b>	<b>L2285857-8</b>						
Total Organic Carbon			87.1		%		70-130	08-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661856</b>							
<b>WG3071718-7</b>	<b>DUP</b>	<b>L2285857-8</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3071718-2</b>	<b>LCS</b>							
Chloride (Cl)			101.7		%		90-110	07-JUN-19
<b>WG3071718-6</b>	<b>LCS</b>							
Chloride (Cl)			102.0		%		90-110	07-JUN-19
<b>WG3071718-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>WG3071718-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
Batch R4661856								
WG3071718-8	MS	L2285857-8						
Chloride (Cl)			98.5		%		75-125	07-JUN-19
<b>EC-L-PCT-CL</b>								
Batch R4665400								
WG3075139-8	LCS							
Conductivity (@ 25C)			104.2		%		90-110	11-JUN-19
WG3075139-7	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-JUN-19
<b>F-IC-N-CL</b>								
Batch R4661856								
WG3071718-7	DUP	L2285857-8						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3071718-2	LCS							
Fluoride (F)			106.0		%		90-110	07-JUN-19
WG3071718-6	LCS							
Fluoride (F)			106.3		%		90-110	07-JUN-19
WG3071718-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
WG3071718-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
WG3071718-8	MS	L2285857-8						
Fluoride (F)			103.8		%		75-125	07-JUN-19
<b>HG-D-CVAA-VA</b>								
Batch R4663363								
WG3072613-6	LCS							
Mercury (Hg)-Dissolved			99.3		%		80-120	11-JUN-19
WG3072613-5	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-JUN-19
<b>MET-D-CCMS-VA</b>								
Batch R4661570								
WG3070049-3	DUP	L2285857-2						
Aluminum (Al)-Dissolved		0.0031	0.0030		mg/L	0.4	20	07-JUN-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-19
Arsenic (As)-Dissolved		0.00191	0.00182		mg/L	4.5	20	07-JUN-19
Barium (Ba)-Dissolved		0.313	0.309		mg/L	1.4	20	07-JUN-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661570</b>							
<b>WG3070049-3</b>	<b>DUP</b>	<b>L2285857-2</b>						
Boron (B)-Dissolved		0.052	0.051		mg/L	2.0	20	07-JUN-19
Cadmium (Cd)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	07-JUN-19
Calcium (Ca)-Dissolved		30.8	29.6		mg/L	3.9	20	07-JUN-19
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	07-JUN-19
Cobalt (Co)-Dissolved		0.00022	0.00021		mg/L	3.1	20	07-JUN-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-JUN-19
Iron (Fe)-Dissolved		0.600	0.587		mg/L	2.2	20	07-JUN-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	07-JUN-19
Lithium (Li)-Dissolved		0.0171	0.0170		mg/L	1.0	20	07-JUN-19
Magnesium (Mg)-Dissolved		12.1	11.9		mg/L	1.8	20	07-JUN-19
Manganese (Mn)-Dissolved		0.163	0.161		mg/L	1.0	20	07-JUN-19
Molybdenum (Mo)-Dissolved		0.0480	0.0473		mg/L	1.4	20	07-JUN-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-JUN-19
Potassium (K)-Dissolved		1.21	1.19		mg/L	1.6	20	07-JUN-19
Selenium (Se)-Dissolved		<0.000050	0.000050	RPD-NA	mg/L	N/A	20	07-JUN-19
Silicon (Si)-Dissolved		3.95	3.86		mg/L	2.4	20	07-JUN-19
Silver (Ag)-Dissolved		0.000016	<0.000010	RPD-NA	mg/L	N/A	20	07-JUN-19
Sodium (Na)-Dissolved		167	163		mg/L	2.2	20	07-JUN-19
Strontium (Sr)-Dissolved		0.292	0.282		mg/L	3.6	20	07-JUN-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	07-JUN-19
Tin (Sn)-Dissolved		0.00012	0.00012		mg/L	4.6	20	07-JUN-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	07-JUN-19
Uranium (U)-Dissolved		0.000881	0.000874		mg/L	0.7	20	07-JUN-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	07-JUN-19
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3070049-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			104.6		%		80-120	07-JUN-19
Antimony (Sb)-Dissolved			100.3		%		80-120	07-JUN-19
Arsenic (As)-Dissolved			100.4		%		80-120	07-JUN-19
Barium (Ba)-Dissolved			102.9		%		80-120	07-JUN-19
Bismuth (Bi)-Dissolved			104.2		%		80-120	07-JUN-19
Boron (B)-Dissolved			94.5		%		80-120	07-JUN-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	07-JUN-19
Calcium (Ca)-Dissolved			98.4		%		80-120	07-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661570</b>							
<b>WG3070049-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			101.5		%		80-120	07-JUN-19
Cobalt (Co)-Dissolved			100.3		%		80-120	07-JUN-19
Copper (Cu)-Dissolved			97.6		%		80-120	07-JUN-19
Iron (Fe)-Dissolved			96.7		%		80-120	07-JUN-19
Lead (Pb)-Dissolved			107.3		%		80-120	07-JUN-19
Lithium (Li)-Dissolved			96.0		%		80-120	07-JUN-19
Magnesium (Mg)-Dissolved			103.9		%		80-120	07-JUN-19
Manganese (Mn)-Dissolved			101.0		%		80-120	07-JUN-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	07-JUN-19
Nickel (Ni)-Dissolved			99.5		%		80-120	07-JUN-19
Potassium (K)-Dissolved			103.3		%		80-120	07-JUN-19
Selenium (Se)-Dissolved			100.3		%		80-120	07-JUN-19
Silicon (Si)-Dissolved			103.1		%		60-140	07-JUN-19
Silver (Ag)-Dissolved			101.1		%		80-120	07-JUN-19
Sodium (Na)-Dissolved			106.2		%		80-120	07-JUN-19
Strontium (Sr)-Dissolved			100.9		%		80-120	07-JUN-19
Thallium (Tl)-Dissolved			105.9		%		80-120	07-JUN-19
Tin (Sn)-Dissolved			99.5		%		80-120	07-JUN-19
Titanium (Ti)-Dissolved			101.5		%		80-120	07-JUN-19
Uranium (U)-Dissolved			105.8		%		80-120	07-JUN-19
Vanadium (V)-Dissolved			103.1		%		80-120	07-JUN-19
Zinc (Zn)-Dissolved			95.6		%		80-120	07-JUN-19
<b>WG3070049-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	07-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	07-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	07-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	07-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661570</b>							
<b>WG3070049-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	07-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	07-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	07-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	07-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	07-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	07-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	07-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	07-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	07-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	07-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	07-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	07-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	07-JUN-19
<b>WG3070049-4</b>	<b>MS</b>	<b>L2285857-1</b>						
Aluminum (Al)-Dissolved			106.5		%		70-130	07-JUN-19
Antimony (Sb)-Dissolved			103.4		%		70-130	07-JUN-19
Arsenic (As)-Dissolved			107.2		%		70-130	07-JUN-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	07-JUN-19
Bismuth (Bi)-Dissolved			89.2		%		70-130	07-JUN-19
Boron (B)-Dissolved			89.3		%		70-130	07-JUN-19
Cadmium (Cd)-Dissolved			101.3		%		70-130	07-JUN-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	07-JUN-19
Chromium (Cr)-Dissolved			101.1		%		70-130	07-JUN-19
Cobalt (Co)-Dissolved			97.5		%		70-130	07-JUN-19
Copper (Cu)-Dissolved			92.6		%		70-130	07-JUN-19
Iron (Fe)-Dissolved			99.3		%		70-130	07-JUN-19
Lead (Pb)-Dissolved			97.3		%		70-130	07-JUN-19
Lithium (Li)-Dissolved			90.4		%		70-130	07-JUN-19





## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661570</b>							
<b>WG3070049-4</b>	<b>MS</b>	<b>L2285857-1</b>						
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	07-JUN-19
Manganese (Mn)-Dissolved			99.3		%		70-130	07-JUN-19
Molybdenum (Mo)-Dissolved			95.3		%		70-130	07-JUN-19
Nickel (Ni)-Dissolved			94.9		%		70-130	07-JUN-19
Potassium (K)-Dissolved			105.6		%		70-130	07-JUN-19
Selenium (Se)-Dissolved			106.5		%		70-130	07-JUN-19
Silicon (Si)-Dissolved			100.3		%		70-130	07-JUN-19
Silver (Ag)-Dissolved			104.1		%		70-130	07-JUN-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	07-JUN-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	07-JUN-19
Thallium (Tl)-Dissolved			95.6		%		70-130	07-JUN-19
Tin (Sn)-Dissolved			102.3		%		70-130	07-JUN-19
Titanium (Ti)-Dissolved			107.1		%		70-130	07-JUN-19
Uranium (U)-Dissolved			103.1		%		70-130	07-JUN-19
Vanadium (V)-Dissolved			104.4		%		70-130	07-JUN-19
Zinc (Zn)-Dissolved			94.9		%		70-130	07-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663733</b>							
<b>WG3073894-14</b>	<b>LCS</b>							
Ammonia as N			103.9		%		85-115	10-JUN-19
<b>WG3073894-13</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	10-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661856</b>							
<b>WG3071718-7</b>	<b>DUP</b>	<b>L2285857-8</b>						
Nitrite (as N)			<0.0010	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3071718-2</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	07-JUN-19
<b>WG3071718-6</b>	<b>LCS</b>							
Nitrite (as N)			104.4		%		90-110	07-JUN-19
<b>WG3071718-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>WG3071718-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>WG3071718-8</b>	<b>MS</b>	<b>L2285857-8</b>						



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b> <b>Water</b>								
Batch	R4661856							
WG3071718-8	MS	L2285857-8						
Nitrite (as N)			100.9		%		75-125	07-JUN-19
<b>NO3-L-IC-N-CL</b> <b>Water</b>								
Batch	R4661856							
WG3071718-7	DUP	L2285857-8						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	07-JUN-19
WG3071718-2	LCS							
Nitrate (as N)			101.5		%		90-110	07-JUN-19
WG3071718-6	LCS							
Nitrate (as N)			102.5		%		90-110	07-JUN-19
WG3071718-1	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
WG3071718-5	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	07-JUN-19
WG3071718-8	MS	L2285857-8						
Nitrate (as N)			99.2		%		75-125	07-JUN-19
<b>ORP-CL</b> <b>Water</b>								
Batch	R4663272							
WG3073457-11	CRM	CL-ORP						
ORP			226		mV		210-230	10-JUN-19
WG3073457-12	DUP	L2285857-6						
ORP		440	435	J	mV	5.0	15	10-JUN-19
<b>P-T-L-COL-CL</b> <b>Water</b>								
Batch	R4663352							
WG3073027-18	LCS							
Phosphorus (P)-Total			101.5		%		80-120	10-JUN-19
WG3073027-22	LCS							
Phosphorus (P)-Total			99.4		%		80-120	10-JUN-19
WG3073027-17	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-JUN-19
WG3073027-21	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-JUN-19
<b>PH-CL</b> <b>Water</b>								
Batch	R4665400							
WG3075139-8	LCS							
pH			7.00		pH		6.9-7.1	11-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661287</b>							
<b>WG3070124-61</b>	<b>DUP</b>	<b>L2285857-8</b>						
Orthophosphate-Dissolved (as P)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	06-JUN-19
<b>WG3070124-60</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			101.8		%		80-120	06-JUN-19
<b>WG3070124-4</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-JUN-19
<b>WG3070124-62</b>	<b>MS</b>	<b>L2285857-4</b>						
Orthophosphate-Dissolved (as P)			106.0		%		70-130	06-JUN-19
<b>SO4-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661856</b>							
<b>WG3071718-7</b>	<b>DUP</b>	<b>L2285857-8</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	07-JUN-19
<b>WG3071718-2</b>	<b>LCS</b>							
Sulfate (SO4)			103.5		%		90-110	07-JUN-19
<b>WG3071718-6</b>	<b>LCS</b>							
Sulfate (SO4)			103.1		%		90-110	07-JUN-19
<b>WG3071718-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
<b>WG3071718-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
<b>WG3071718-8</b>	<b>MS</b>	<b>L2285857-8</b>						
Sulfate (SO4)			99.3		%		75-125	07-JUN-19
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4663874</b>							
<b>WG3072114-17</b>	<b>LCS</b>							
Total Dissolved Solids			94.6		%		85-115	10-JUN-19
<b>WG3072114-16</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	10-JUN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4665759</b>							
<b>WG3075289-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.3		%		75-125	12-JUN-19
<b>WG3075289-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.9		%		75-125	12-JUN-19
<b>WG3075289-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.8		%		75-125	12-JUN-19
<b>WG3075289-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.7		%		75-125	12-JUN-19



## Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4665759</b>							
<b>WG3075289-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-19
<b>WG3075289-10</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-19
<b>WG3075289-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-19
<b>WG3075289-8</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-JUN-19
<b>TSS-L-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662474</b>							
<b>WG3071859-4</b>	<b>LCS</b>							
Total Suspended Solids			89.4		%		85-115	08-JUN-19
<b>WG3071859-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	08-JUN-19
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4661885</b>							
<b>WG3071389-12</b>	<b>DUP</b>	<b>L2285857-4</b>						
Turbidity		1.12	1.16		NTU	3.5	15	07-JUN-19
<b>WG3071389-11</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	07-JUN-19
<b>WG3071389-8</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	07-JUN-19
<b>WG3071389-10</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-JUN-19
<b>WG3071389-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-JUN-19

# Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2285857

Report Date: 17-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	04-JUN-19 14:39	10-JUN-19 08:20	0.25	138	hours	EHTR-FM
	2	04-JUN-19 15:02	10-JUN-19 08:20	0.25	137	hours	EHTR-FM
	3	04-JUN-19 12:57	10-JUN-19 08:20	0.25	139	hours	EHTR-FM
	4	04-JUN-19 11:28	10-JUN-19 08:20	0.25	141	hours	EHTR-FM
	5	04-JUN-19 11:40	10-JUN-19 08:20	0.25	141	hours	EHTR-FM
	6	04-JUN-19 12:00	10-JUN-19 08:20	0.25	140	hours	EHTR-FM
	7	04-JUN-19 12:00	10-JUN-19 08:20	0.25	140	hours	EHTR-FM
	8	04-JUN-19 12:00	10-JUN-19 08:20	0.25	140	hours	EHTR-FM
pH							
	1	04-JUN-19 14:39	11-JUN-19 15:00	0.25	168	hours	EHTR-FM
	2	04-JUN-19 15:02	11-JUN-19 15:00	0.25	168	hours	EHTR-FM
	3	04-JUN-19 12:57	11-JUN-19 15:00	0.25	170	hours	EHTR-FM
	4	04-JUN-19 11:28	11-JUN-19 15:00	0.25	172	hours	EHTR-FM
	5	04-JUN-19 11:40	11-JUN-19 15:00	0.25	171	hours	EHTR-FM
	6	04-JUN-19 12:00	11-JUN-19 15:00	0.25	171	hours	EHTR-FM
	7	04-JUN-19 12:00	11-JUN-19 15:00	0.25	171	hours	EHTR-FM
	8	04-JUN-19 12:00	11-JUN-19 15:00	0.25	171	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2285857 were received on 05-JUN-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> COC_WG_Q2_20190604		<b>TURNAROUND TIME:</b> Regular			<b>RUSH:</b> No				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Coal Mountain Operations		Lab Name ALS Calgary		Report Format / Distribution			Excel	PDF	EDD
Project Manager Jay Jones		Lab Contact Lyudmyla Shvets		Email 1: Scott.Holmgren@teck.co		X	X	X	
Email Jay.Jones@teck.com		Email Lyudmyla.Shvets@alsglobal.com		Email 2: teckcoal@equisonline.co				X	
Address PO Box 3000		Address 2559 29th St. NE		Email 3: Jay.jones@teck.com		X	X	X	
City Sparwood Province BC		City Calgary Province AB		Email 4: Don.Sacino@teck.com		X	X	X	
Postal Code V0B 2G0 Country Canada		Postal Code T1Y 7B5 Country Canada		Email 5: Kate.Middleton@teck.co		X	X	X	
Phone Number 1-250-425-7321		Phone Number 403 407 1800		PO number		611069			

**SAMPLE DETAILS** ANALYSIS REQUESTED Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2285857-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA							
CM_MW1-OB_WG_2019-04-08_N	CM_MW1-OB	WG	No	2019/06/04	14:39	G	5	1	1	1	1	1							
CM_MW1-SH_WG_2019-04-08_N	CM_MW1-SH	WG	No	2019/06/04	15:02	G	5	1	1	1	1	1							
CM_MW2-SH_WG_2019-04-08_N	CM_MW2-SH	WG	No	2019/06/04	12:57	G	5	1	1	1	1	1							
CM_MW3-DP_WG_2019-04-08_N	CM_MW3-DP	WG	No	2019/06/04	11:28	G	5	1	1	1	1	1							
CM_MW3-SH_WG_2019-04-08_N	CM_MW3-SH	WG	No	2019/06/04	11:40	G	5	1	1	1	1	1							
CM_NNP_WS_2019-04-08_N	CM_NNP	WG	No	2019/06/04	-	G	5	1	1	1	1	1							
CM_NNP2_WS_2019-04-08_N	CM_NNP2	WG	No	2019/06/04	-	G	5	1	1	1	1	1							
CM_TRP_WS_2019-04-08_N	CM_TRP	WG	No	2019/06/04	-	G	5	1	1	1	1	1							

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>DLK</i>	6/5 0900

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) <input checked="" type="checkbox"/>	<b>Sampler's Name</b>	DS/JDW	<b>Mobile #</b>	250 425 7518
Priority (2-3 business days) - 50% surcharge	<b>Sampler's Signature</b>		<b>Date/Time</b>	June 4, 2019 - 17:00
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

12°C



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 06-JUN-19  
Report Date: 24-JUN-19 17:54 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2286697  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q2\_20190605  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-1 CM_MW1-DP_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 09:16							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.57		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	1.15		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	2.49		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	0.0037		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	0.00132		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	9.62		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.240		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	32.1		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	0.58		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.688		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	17.1		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.130		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.00383		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	0.00067		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	4.93		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	4.90		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	224		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	2.28		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	0.00031		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.000593		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0056		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	151		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	327		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	20.8		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-1 CM_MW1-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 09:16 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	348		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.586		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.96	DLHC	0.25	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	238	DLHC	2.5	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1370		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.21	DLHC	0.10	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Ion Balance	94.6		-100	%		14-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.8			%		14-JUN-19	
Anion Sum	13.7			meq/L		14-JUN-19	
Cation Sum	12.9			meq/L		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0327		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	324		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.212		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	716	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	10.6		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	14.6		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.52		0.10	pH		12-JUN-19	R4669583
L2286697-2 CM_MW4-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.79		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	1.19		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	<10	DLM	10	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-2 CM_MW4-DP_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.503		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.394		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	7.67		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.978		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	1.94		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.00563		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.000613		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	1.44		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	4.21		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	684		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	1.11		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.000043		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	0.00065		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	27.2		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	790		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	71.2		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	861		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.659		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	1.83	DLHC	0.25	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	473	DLHC	2.5	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2940		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.47	DLHC	0.10	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-2 CM_MW4-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	99.3		-100	%		15-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.3			%		15-JUN-19	
Anion Sum	30.6			meq/L		15-JUN-19	
Cation Sum	30.4			meq/L		15-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.076	DLHC	0.025	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0105		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	282		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0206		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1610	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	55.6		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	258		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.71		0.10	pH		12-JUN-19	R4669583
L2286697-3 CM_MW4-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.13		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	0.658		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	2.06		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.291		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.350		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	6.58		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-3 CM_MW4-SH_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.435		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	2.29		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.00488		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.000804		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	1.09		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	4.28		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	337		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	0.744		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.000011		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	25.9		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	553		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	45.8		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	599		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.443		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.44	DLHC	0.25	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	123	DLHC	2.5	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1450		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.46	DLHC	0.10	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Ion Balance	98.6		-100	%		14-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.7			%		14-JUN-19	
Anion Sum	15.5			meq/L		14-JUN-19	
Cation Sum	15.2			meq/L		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0109		0.0010	mg/L		07-JUN-19	R4661287

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-3 CM_MW4-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 15:15 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	405		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0201		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b> Total Dissolved Solids	814	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b> Total Suspended Solids	3.5		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b> Turbidity	10.5		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	8.71		0.10	pH		12-JUN-19	R4669583
L2286697-4 CM_MW5-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 14:50 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.80		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	0.942		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	1.68		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	1.13		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.124		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	69.4		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	0.704		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.0673		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	25.1		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.0568		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.000805		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	0.00084		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	3.49		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	0.086		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	6.54		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-4 CM_MW5-DP_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 14:50							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	60.5		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	1.91		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.000141		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0050		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	277		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	8.2		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	378		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	378		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.702	DLHC	0.010	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	10.3		0.50	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	666		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.332		0.020	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.7			%		14-JUN-19	
Anion Sum	7.89			meq/L		14-JUN-19	
Cation Sum	8.34			meq/L		14-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	106		-100	%		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0094		0.0050	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	325		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0091		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1.12		0.30	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	420	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	9.4		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	15.1		0.10	NTU		07-JUN-19	R4661885

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-4 CM_MW5-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 14:50 Matrix: WG							
<b>pH</b> pH	8.07		0.10	pH		12-JUN-19	R4669583
L2286697-5 CM_MW5-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 14:32 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.85		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	0.320		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	1.71		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	0.00034		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	0.00022		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.0543		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.034		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	0.0333		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	97.0		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	0.00027		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	0.00135		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	0.000083		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.0176		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	44.6		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.00036		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.00339		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	0.00106		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	1.82		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	9.69		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	2.19		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	12.4		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	0.296		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	0.000039		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	0.00016		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.00321		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0061		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	426		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-5 CM_MW5-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 14:32 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.2		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	224		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	7.2		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	231		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0218		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	8.93		0.50	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	851		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.212		0.020	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-4.1			%		14-JUN-19	
Anion Sum	9.88			meq/L		14-JUN-19	
Cation Sum	9.10			meq/L		14-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	92.1		-100	%		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	1.99		0.0050	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	294		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0049		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	233		0.30	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	571	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.7		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	2.21		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.31		0.10	pH		12-JUN-19	R4669583
L2286697-6 CM_MW7-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:50 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.93		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	0.416	TKNI	0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	1.98		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-6 CM_MW7-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:50 Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	0.00028		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.0137		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.059		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	0.0933		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	359		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	0.00036		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	1.01		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.0581		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	136		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.465		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.000108		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	0.0190		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	2.60		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	17.8		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	2.52		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	24.6		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	0.888		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.00488		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0158		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b> Hardness (as CaCO3)	1460		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b> <b>Acidity by Automatic Titration</b> Acidity (as CaCO3)	18.0		1.0	mg/L		12-JUN-19	R4668170
<b>Alkalinity (Species) by Manual Titration</b> Alkalinity, Bicarbonate (as CaCO3)	347		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	347		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b> Ammonia as N	0.0114		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b> Bromide (Br)	<0.25	DLHC	0.25	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b> Chloride (Cl)	2.9	DLHC	2.5	mg/L		07-JUN-19	R4663920

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-6 CM_MW7-DP_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:50 Matrix: WG							
<b>Electrical Conductivity (EC)</b> Conductivity (@ 25C)	2330		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b> Fluoride (F)	0.12	DLHC	0.10	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b> Ion Balance	94.4		-100	%		14-JUN-19	
<b>Ion Balance Calculation</b> Cation - Anion Balance	-2.9			%		14-JUN-19	
Anion Sum	32.1			meq/L		14-JUN-19	
Cation Sum	30.3			meq/L		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	5.11	DLHC	0.025	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	0.176	DLHC	0.0050	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b> ORP	358		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0028		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b> Sulfate (SO4)	1190	DLHC	1.5	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b> Total Dissolved Solids	2010	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b> Total Suspended Solids	5.6		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b> Turbidity	2.16		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	7.90		0.10	pH		12-JUN-19	R4669583
L2286697-7 CM_MW7-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:44 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	3.37		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	0.293		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	3.71		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	0.00035		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.0304		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.032		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-7 CM_MW7-SH_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 10:44							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	0.0060		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	107		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	0.71		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	0.207		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.0068		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	35.1		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.182		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.00147		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	0.00133		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Potassium (K)-Dissolved	1.65		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	0.057		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	5.10		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	18.0		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	0.402		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.00106		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0057		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	411		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	5.6		1.0	mg/L		13-JUN-19	R4670146
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	295		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	295		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0609		0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.058		0.050	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	13.9		0.50	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	758		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.277		0.020	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.6			%		14-JUN-19	
Anion Sum	9.53			meq/L		14-JUN-19	
Cation Sum	9.05			meq/L		14-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	95.0		-100	%		14-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0237		0.0050	mg/L		07-JUN-19	R4663920

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-7 CM_MW7-SH_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:44 Matrix: WG							
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b> ORP	268		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0188		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b> Sulfate (SO4)	155		0.30	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b> Total Dissolved Solids	515	DLHC	20	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b> Total Suspended Solids	36.2		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b> Turbidity	23.4		0.10	NTU		07-JUN-19	R4661885
<b>pH</b> pH	7.89		0.10	pH		12-JUN-19	R4669583
L2286697-8 CM_MW8_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:15 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.75		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	1.45		0.050	mg/L		15-JUN-19	R4670323
Total Organic Carbon	1.95		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	08-JUN-19	08-JUN-19	R4662191
Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					08-JUN-19	R4661857
Aluminum (Al)-Dissolved	0.0052		0.0030	mg/L	08-JUN-19	08-JUN-19	R4662191
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Barium (Ba)-Dissolved	0.0845		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Boron (B)-Dissolved	0.265		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	08-JUN-19	08-JUN-19	R4662191
Calcium (Ca)-Dissolved	93.5		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Cobalt (Co)-Dissolved	0.22		0.10	ug/L	08-JUN-19	08-JUN-19	R4662191
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Iron (Fe)-Dissolved	0.342		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Lithium (Li)-Dissolved	0.0580		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
Magnesium (Mg)-Dissolved	27.1		0.10	mg/L	08-JUN-19	08-JUN-19	R4662191
Manganese (Mn)-Dissolved	0.137		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Molybdenum (Mo)-Dissolved	0.000414		0.000050	mg/L	08-JUN-19	08-JUN-19	R4662191
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-8 CM_MW8_WG_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 10:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Potassium (K)-Dissolved	2.96		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Selenium (Se)-Dissolved	0.055		0.050	ug/L	08-JUN-19	08-JUN-19	R4662191
Silicon (Si)-Dissolved	7.20		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Sodium (Na)-Dissolved	37.9		0.050	mg/L	08-JUN-19	08-JUN-19	R4662191
Strontium (Sr)-Dissolved	5.60		0.00020	mg/L	08-JUN-19	08-JUN-19	R4662191
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Tin (Sn)-Dissolved	0.00030		0.00010	mg/L	08-JUN-19	08-JUN-19	R4662191
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-JUN-19	08-JUN-19	R4662191
Uranium (U)-Dissolved	0.000217		0.000010	mg/L	08-JUN-19	08-JUN-19	R4662191
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	08-JUN-19	08-JUN-19	R4662191
Zinc (Zn)-Dissolved	0.0057		0.0010	mg/L	08-JUN-19	08-JUN-19	R4662191
<b>Hardness</b>							
Hardness (as CaCO3)	345		0.50	mg/L		09-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	4.1		1.0	mg/L		13-JUN-19	R4670146
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	282		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	282		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.982	DLHC	0.050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.03		0.50	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	701		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.263		0.020	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.6			%		15-JUN-19	
Anion Sum	7.63			meq/L		15-JUN-19	
Cation Sum	8.71			meq/L		15-JUN-19	
<b>Ion Balance Calculation</b>							
Ion Balance	114		-100	%		15-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0189		0.0050	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	345		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0290		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	94.3		0.30	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	444	DLHC	20	mg/L		11-JUN-19	R4667930

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-8 CM_MW8_WG_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 10:15 Matrix: WG							
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.5		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	13.1		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	8.18		0.10	pH		12-JUN-19	R4669583
L2286697-9 CM_NNT_WS_2019-04-08_N Sampled By: DS/KP/MC on 05-JUN-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		12-JUN-19	R4668130
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		14-JUN-19	R4670323
Total Organic Carbon	<0.50		0.50	mg/L		12-JUN-19	R4668130
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	23-JUN-19	23-JUN-19	R4682702
Dissolved Metals Filtration Location	FIELD					23-JUN-19	R4682181
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	11-JUN-19	12-JUN-19	R4664290
Dissolved Mercury Filtration Location	FIELD					11-JUN-19	R4663806
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					23-JUN-19	R4682181
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	23-JUN-19	23-JUN-19	R4682702
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	23-JUN-19	23-JUN-19	R4682702
Boron (B)-Dissolved	<0.010		0.010	mg/L	23-JUN-19	23-JUN-19	R4682702
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	23-JUN-19	23-JUN-19	R4682702
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	23-JUN-19	23-JUN-19	R4682702
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	23-JUN-19	23-JUN-19	R4682702
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	23-JUN-19	23-JUN-19	R4682702
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	23-JUN-19	23-JUN-19	R4682702
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	23-JUN-19	23-JUN-19	R4682702
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	23-JUN-19	23-JUN-19	R4682702
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	23-JUN-19	23-JUN-19	R4682702
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	23-JUN-19	23-JUN-19	R4682702
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	23-JUN-19	23-JUN-19	R4682702
Potassium (K)-Dissolved	<0.050		0.050	mg/L	23-JUN-19	23-JUN-19	R4682702
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	23-JUN-19	23-JUN-19	R4682702
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	23-JUN-19	23-JUN-19	R4682702
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	23-JUN-19	23-JUN-19	R4682702
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	23-JUN-19	23-JUN-19	R4682702
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	23-JUN-19	23-JUN-19	R4682702
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	23-JUN-19	23-JUN-19	R4682702
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	23-JUN-19	23-JUN-19	R4682702
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	23-JUN-19	23-JUN-19	R4682702
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	23-JUN-19	23-JUN-19	R4682702
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	23-JUN-19	23-JUN-19	R4682702
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	23-JUN-19	23-JUN-19	R4682702

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2286697-9 CM_NNT_WS_2019-04-08_N							
Sampled By: DS/KP/MC on 05-JUN-19 @ 12:00							
Matrix: WG							
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		24-JUN-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.0		1.0	mg/L		13-JUN-19	R4670146
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		12-JUN-19	R4669583
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0261	RRV	0.0050	mg/L		12-JUN-19	R4668727
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		07-JUN-19	R4663920
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		07-JUN-19	R4663920
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		12-JUN-19	R4669583
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		07-JUN-19	R4663920
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		24-JUN-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		24-JUN-19	
Anion Sum	<0.10			meq/L		24-JUN-19	
Cation Sum	<0.10			meq/L		24-JUN-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-JUN-19	R4663920
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-JUN-19	R4663920
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		07-JUN-19	R4661287
<b>Oxidation redution potential by elect.</b>							
ORP	450		-1000	mV		12-JUN-19	R4667329
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		11-JUN-19	R4663807
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		07-JUN-19	R4663920
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		11-JUN-19	R4667930
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		11-JUN-19	R4665072
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		07-JUN-19	R4661885
<b>pH</b>							
pH	5.39		0.10	pH		12-JUN-19	R4669583

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q2\_20190605

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 1 of 12

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4668170							
<b>WG3076106-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.4		%		85-115	12-JUN-19
Batch	R4670146							
<b>WG3076106-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.1		mg/L		2	12-JUN-19
Batch	R4670146							
<b>WG3077278-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.0		%		85-115	13-JUN-19
Batch	R4670146							
<b>WG3077278-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	13-JUN-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4669583							
<b>WG3076067-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.4		%		85-115	12-JUN-19
Batch	R4669583							
<b>WG3076067-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	12-JUN-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4662191							
<b>WG3071721-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	08-JUN-19
Batch	R4662191							
<b>WG3071721-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	08-JUN-19
Batch	R4682702							
<b>WG3085767-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			114.5		%		80-120	23-JUN-19
Batch	R4682702							
<b>WG3085767-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	23-JUN-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4663920							
<b>WG3074230-10</b>	<b>LCS</b>							
Bromide (Br)			105.6		%		85-115	07-JUN-19
Batch	R4663920							
<b>WG3074230-6</b>	<b>LCS</b>							
Bromide (Br)			101.8		%		85-115	07-JUN-19
Batch	R4663920							
<b>WG3074230-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
Batch	R4663920							
<b>WG3074230-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-JUN-19
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668130</b>							
<b>WG3076211-3</b>	<b>DUP</b>	<b>L2286697-6</b>						
Dissolved Organic Carbon		1.93	1.68		mg/L	14	20	12-JUN-19
<b>WG3076211-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.1		%		80-120	12-JUN-19
<b>WG3076211-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	12-JUN-19
<b>WG3076211-4</b>	<b>MS</b>	<b>L2286697-7</b>						
Dissolved Organic Carbon			98.6		%		70-130	12-JUN-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668130</b>							
<b>WG3076211-3</b>	<b>DUP</b>	<b>L2286697-6</b>						
Total Organic Carbon		1.98	2.38		mg/L	18	20	12-JUN-19
<b>WG3076211-2</b>	<b>LCS</b>							
Total Organic Carbon			103.0		%		80-120	12-JUN-19
<b>WG3076211-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	12-JUN-19
<b>WG3076211-4</b>	<b>MS</b>	<b>L2286697-7</b>						
Total Organic Carbon			96.2		%		70-130	12-JUN-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Chloride (Cl)			104.2		%		90-110	07-JUN-19
<b>WG3074230-6</b>	<b>LCS</b>							
Chloride (Cl)			101.2		%		90-110	07-JUN-19
<b>WG3074230-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	07-JUN-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4669583</b>							
<b>WG3076067-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			103.4		%		90-110	12-JUN-19
<b>WG3076067-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	12-JUN-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Fluoride (F)			107.6		%		90-110	07-JUN-19
<b>WG3074230-6</b>	<b>LCS</b>							
Fluoride (F)			102.7		%		90-110	07-JUN-19
<b>WG3074230-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	07-JUN-19
<b>HG-D-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4664290</b>							
<b>WG3074062-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.2		%		80-120	12-JUN-19
<b>WG3074062-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.5		%		80-120	12-JUN-19
<b>WG3074062-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-JUN-19
<b>WG3074062-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	12-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4662191</b>							
<b>WG3071721-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			110.7		%		80-120	08-JUN-19
Antimony (Sb)-Dissolved			97.6		%		80-120	08-JUN-19
Arsenic (As)-Dissolved			105.8		%		80-120	08-JUN-19
Barium (Ba)-Dissolved			109.2		%		80-120	08-JUN-19
Bismuth (Bi)-Dissolved			97.6		%		80-120	08-JUN-19
Boron (B)-Dissolved			97.5		%		80-120	08-JUN-19
Cadmium (Cd)-Dissolved			110.2		%		80-120	08-JUN-19
Calcium (Ca)-Dissolved			100.2		%		80-120	08-JUN-19
Chromium (Cr)-Dissolved			109.9		%		80-120	08-JUN-19
Cobalt (Co)-Dissolved			106.6		%		80-120	08-JUN-19
Copper (Cu)-Dissolved			107.6		%		80-120	08-JUN-19
Iron (Fe)-Dissolved			106.1		%		80-120	08-JUN-19
Lead (Pb)-Dissolved			99.8		%		80-120	08-JUN-19
Lithium (Li)-Dissolved			94.9		%		80-120	08-JUN-19
Magnesium (Mg)-Dissolved			110.3		%		80-120	08-JUN-19
Manganese (Mn)-Dissolved			115.8		%		80-120	08-JUN-19



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662191</b>							
<b>WG3071721-2</b>	<b>LCS</b>							
Molybdenum (Mo)-Dissolved			103.1		%		80-120	08-JUN-19
Nickel (Ni)-Dissolved			109.2		%		80-120	08-JUN-19
Potassium (K)-Dissolved			109.4		%		80-120	08-JUN-19
Selenium (Se)-Dissolved			109.4		%		80-120	08-JUN-19
Silicon (Si)-Dissolved			111.8		%		60-140	08-JUN-19
Silver (Ag)-Dissolved			99.3		%		80-120	08-JUN-19
Sodium (Na)-Dissolved			109.2		%		80-120	08-JUN-19
Strontium (Sr)-Dissolved			99.5		%		80-120	08-JUN-19
Thallium (Tl)-Dissolved			96.8		%		80-120	08-JUN-19
Tin (Sn)-Dissolved			100.5		%		80-120	08-JUN-19
Titanium (Ti)-Dissolved			101.4		%		80-120	08-JUN-19
Uranium (U)-Dissolved			95.8		%		80-120	08-JUN-19
Vanadium (V)-Dissolved			110.6		%		80-120	08-JUN-19
Zinc (Zn)-Dissolved			105.5		%		80-120	08-JUN-19
<b>WG3071721-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	08-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	08-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	08-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	08-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	08-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	08-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	08-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	08-JUN-19



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4662191</b>							
<b>WG3071721-1</b>	<b>MB</b>	<b>NP</b>						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	08-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	08-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	08-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	08-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	08-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	08-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	08-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	08-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	08-JUN-19
<b>Batch</b>	<b>R4682702</b>							
<b>WG3085767-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			113.7		%		80-120	23-JUN-19
Antimony (Sb)-Dissolved			92.3		%		80-120	23-JUN-19
Arsenic (As)-Dissolved			98.1		%		80-120	23-JUN-19
Barium (Ba)-Dissolved			93.4		%		80-120	23-JUN-19
Bismuth (Bi)-Dissolved			93.3		%		80-120	23-JUN-19
Boron (B)-Dissolved			115.1		%		80-120	23-JUN-19
Cadmium (Cd)-Dissolved			98.0		%		80-120	23-JUN-19
Calcium (Ca)-Dissolved			97.4		%		80-120	23-JUN-19
Chromium (Cr)-Dissolved			98.4		%		80-120	23-JUN-19
Cobalt (Co)-Dissolved			103.1		%		80-120	23-JUN-19
Copper (Cu)-Dissolved			98.2		%		80-120	23-JUN-19
Iron (Fe)-Dissolved			92.9		%		80-120	23-JUN-19
Lead (Pb)-Dissolved			95.7		%		80-120	23-JUN-19
Magnesium (Mg)-Dissolved			106.2		%		80-120	23-JUN-19
Manganese (Mn)-Dissolved			100.5		%		80-120	23-JUN-19
Molybdenum (Mo)-Dissolved			102.9		%		80-120	23-JUN-19
Nickel (Ni)-Dissolved			101.0		%		80-120	23-JUN-19
Potassium (K)-Dissolved			98.8		%		80-120	23-JUN-19
Selenium (Se)-Dissolved			100.7		%		80-120	23-JUN-19
Silicon (Si)-Dissolved			114.1		%		60-140	23-JUN-19
Silver (Ag)-Dissolved			88.0		%		80-120	23-JUN-19





## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4682702</b>							
<b>WG3085767-2</b>	<b>LCS</b>							
Sodium (Na)-Dissolved			102.5		%		80-120	23-JUN-19
Strontium (Sr)-Dissolved			98.2		%		80-120	23-JUN-19
Thallium (Tl)-Dissolved			95.4		%		80-120	23-JUN-19
Tin (Sn)-Dissolved			94.1		%		80-120	23-JUN-19
Titanium (Ti)-Dissolved			95.5		%		80-120	23-JUN-19
Uranium (U)-Dissolved			96.4		%		80-120	23-JUN-19
Vanadium (V)-Dissolved			100.3		%		80-120	23-JUN-19
Zinc (Zn)-Dissolved			96.1		%		80-120	23-JUN-19
<b>WG3085767-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-JUN-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-JUN-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-JUN-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-JUN-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUN-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-JUN-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUN-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-JUN-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-JUN-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUN-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-JUN-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-JUN-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUN-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-JUN-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-JUN-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-JUN-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUN-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-JUN-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-JUN-19



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4682702</b>							
<b>WG3085767-1</b>	<b>MB</b>	<b>NP</b>						
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-JUN-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-JUN-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-JUN-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-JUN-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-JUN-19
<b>Batch</b>	<b>R4683111</b>							
<b>WG3085767-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			102.8		%		80-120	24-JUN-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4668727</b>							
<b>WG3076361-22</b>	<b>LCS</b>							
Ammonia as N			112.0		%		85-115	12-JUN-19
<b>WG3076361-26</b>	<b>LCS</b>							
Ammonia as N			102.5		%		85-115	12-JUN-19
<b>WG3076361-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-JUN-19
<b>WG3076361-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-JUN-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrite (as N)			106.4		%		90-110	07-JUN-19
<b>WG3074230-6</b>	<b>LCS</b>							
Nitrite (as N)			103.6		%		90-110	07-JUN-19
<b>WG3074230-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>WG3074230-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-JUN-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4663920</b>							
<b>WG3074230-10</b>	<b>LCS</b>							
Nitrate (as N)			104.7		%		90-110	07-JUN-19
<b>WG3074230-6</b>	<b>LCS</b>							
Nitrate (as N)			102.4		%		90-110	07-JUN-19
<b>WG3074230-5</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>								
<b>Batch R4663920</b>								
<b>WG3074230-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
<b>WG3074230-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
<b>SOLIDS-TDS-CL</b>								
<b>Batch R4667930</b>								
<b>WG3073552-9 DUP</b>		<b>L2286697-8</b>						
Total Dissolved Solids		444	443		mg/L	0.3	20	11-JUN-19
<b>WG3073552-11 LCS</b>								
Total Dissolved Solids			96.4		%		85-115	11-JUN-19
<b>WG3073552-8 LCS</b>								
Total Dissolved Solids			96.5		%		85-115	11-JUN-19
<b>WG3073552-10 MB</b>								
Total Dissolved Solids			<10		mg/L		10	11-JUN-19
<b>WG3073552-7 MB</b>								
Total Dissolved Solids			<10		mg/L		10	11-JUN-19
<b>TKN-L-F-CL</b>								
<b>Batch R4670323</b>								
<b>WG3077697-16 LCS</b>								
Total Kjeldahl Nitrogen			89.3		%		75-125	15-JUN-19
<b>WG3077697-18 LCS</b>								
Total Kjeldahl Nitrogen			91.5		%		75-125	15-JUN-19
<b>WG3077697-2 LCS</b>								
Total Kjeldahl Nitrogen			96.4		%		75-125	14-JUN-19
<b>WG3077697-22 LCS</b>								
Total Kjeldahl Nitrogen			92.5		%		75-125	15-JUN-19
<b>WG3077697-4 LCS</b>								
Total Kjeldahl Nitrogen			103.4		%		75-125	14-JUN-19
<b>WG3077697-6 LCS</b>								
Total Kjeldahl Nitrogen			116.6		%		75-125	14-JUN-19
<b>WG3077697-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>WG3077697-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19
<b>WG3077697-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19
<b>WG3077697-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-JUN-19



## Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4670323</b>							
<b>WG3077697-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>WG3077697-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	14-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4665072</b>							
<b>WG3073472-6</b>	<b>DUP</b>	<b>L2286697-2</b>						
Total Suspended Solids		55.6	55.6		mg/L	0.0	20	11-JUN-19
<b>WG3073472-5</b>	<b>LCS</b>							
Total Suspended Solids			107.4		%		85-115	11-JUN-19
<b>WG3073472-8</b>	<b>LCS</b>							
Total Suspended Solids			96.1		%		85-115	11-JUN-19
<b>WG3073472-4</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	11-JUN-19
<b>WG3073472-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	11-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4661885</b>							
<b>WG3071389-20</b>	<b>LCS</b>							
Turbidity			97.5		%		85-115	07-JUN-19
<b>WG3071389-19</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	07-JUN-19

# Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2286697

Report Date: 24-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	05-JUN-19 09:16	12-JUN-19 10:55	0.25	170	hours	EHTR-FM
	2	05-JUN-19 15:15	12-JUN-19 10:55	0.25	164	hours	EHTR-FM
	3	05-JUN-19 15:15	12-JUN-19 10:55	0.25	164	hours	EHTR-FM
	4	05-JUN-19 14:50	12-JUN-19 10:55	0.25	164	hours	EHTR-FM
	5	05-JUN-19 14:32	12-JUN-19 10:55	0.25	164	hours	EHTR-FM
	6	05-JUN-19 10:50	12-JUN-19 10:55	0.25	168	hours	EHTR-FM
	7	05-JUN-19 10:44	12-JUN-19 10:55	0.25	168	hours	EHTR-FM
	8	05-JUN-19 10:15	12-JUN-19 10:55	0.25	169	hours	EHTR-FM
	9	05-JUN-19 12:00	12-JUN-19 11:20	0.25	167	hours	EHTR-FM
pH							
	1	05-JUN-19 09:16	12-JUN-19 12:00	0.25	171	hours	EHTR-FM
	2	05-JUN-19 15:15	12-JUN-19 12:00	0.25	165	hours	EHTR-FM
	3	05-JUN-19 15:15	12-JUN-19 12:00	0.25	165	hours	EHTR-FM
	4	05-JUN-19 14:50	12-JUN-19 12:00	0.25	165	hours	EHTR-FM
	5	05-JUN-19 14:32	12-JUN-19 12:00	0.25	165	hours	EHTR-FM
	6	05-JUN-19 10:50	12-JUN-19 12:00	0.25	169	hours	EHTR-FM
	7	05-JUN-19 10:44	12-JUN-19 12:00	0.25	169	hours	EHTR-FM
	8	05-JUN-19 10:15	12-JUN-19 12:00	0.25	170	hours	EHTR-FM
	9	05-JUN-19 12:00	12-JUN-19 12:00	0.25	168	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2286697 were received on 06-JUN-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC\_WG\_Q2\_20190605**      TURNAROUND TIME: **Regular**      RUSH: **No**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Scott.Holmgren@teck.co	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.co			X
								Email 3:	Jay.jones@teck.com	X	X	X
								Email 4:	Don.Sadno@teck.com	X	X	X
Address	PO Box 3000			Address	2559 29th St. NE			Email 5:	Kate.Middleton@teck.co	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	PO number	<b>611069</b>			
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	1-250-425-7321			Phone Number	403 407 1800							

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2286697-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA							
CM_MW1-DP_WG_2019-04-08_N	CM_MW1-DP	WG	N	2019/06/05	9:16	G	5	1	1	1	1	1							
CM_MW4-DP_WG_2019-04-08_N	CM_MW4-DP	WG	N	2019/06/05	15:15	G	5	1	1	1	1	1							
CM_MW4-SH_WG_2019-04-08_N	CM_MW4-SH	WG	N	2019/06/05	15:15	G	5	1	1	1	1	1							
CM_MW5-DP_WG_2019-04-08_N	CM_MW5-DP	WG	N	2019/06/05	14:50	G	5	1	1	1	1	1							
CM_MW5-SH_WG_2019-04-08_N	CM_MW5-SH	WG	N	2019/06/05	14:32	G	5	1	1	1	1	1							
CM_MW7-DP_WG_2019-04-08_N	CM_MW7-DP	WG	N	2019/06/05	10:50	G	5	1	1	1	1	1							
CM_MW7-SH_WG_2019-04-08_N	CM_MW7-SH	WG	N	2019/06/05	10:44	G	5	1	1	1	1	1							
CM_MW8_WG_2019-04-08_N	CM_MW8	WG	N	2019/06/05	10:15	G	5	1	1	1	1	1							
CM_NNT_WS_2019-04-08_N	CM_NNT	WG	N	2019/06/05	-	G	5	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	6/6/2019

<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	
Sampler's Name	DS/KP/MC	Mobile #	250 425 7518	
Sampler's Signature	<i>[Signature]</i>	Date/Time	6/5/2019 17:00:00	





TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 22-AUG-19  
Report Date: 29-AUG-19 18:30 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2334325  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-1 CM_MW2-SH_WG_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:05							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.25		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	1.20		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-19	25-AUG-19	R4769111
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-19	25-AUG-19	R4769111
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Barium (Ba)-Dissolved	0.109		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Boron (B)-Dissolved	0.048		0.010	mg/L	25-AUG-19	27-AUG-19	R4769674
Cadmium (Cd)-Dissolved	0.147		0.0050	ug/L	25-AUG-19	25-AUG-19	R4769111
Calcium (Ca)-Dissolved	189		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-19	25-AUG-19	R4769111
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Lead (Pb)-Dissolved	0.000097		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Lithium (Li)-Dissolved	0.0267		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Magnesium (Mg)-Dissolved	52.4		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Manganese (Mn)-Dissolved	0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Molybdenum (Mo)-Dissolved	0.000128		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Nickel (Ni)-Dissolved	0.00082		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Potassium (K)-Dissolved	1.62		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Selenium (Se)-Dissolved	0.162		0.050	ug/L	25-AUG-19	25-AUG-19	R4769111
Silicon (Si)-Dissolved	4.95		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Sodium (Na)-Dissolved	27.9		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Strontium (Sr)-Dissolved	0.551		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Uranium (U)-Dissolved	0.000213		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
<b>Hardness</b>							
Hardness (as CaCO3)	687		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	30.3		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	339		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-1 CM_MW2-SH_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:05 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	339		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0070		0.0050	mg/L		26-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.64		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.104		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.3			%		27-AUG-19	
Anion Sum	15.4			meq/L		27-AUG-19	
Cation Sum	15.0			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	97.5		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0842		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation reduction potential by elect.</b>							
ORP	336		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	409		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	878	DLHC	20	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.5		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b>							
Turbidity	0.48		0.10	NTU		23-AUG-19	R4767812
<b>pH</b>							
pH	8.05		0.10	pH		23-AUG-19	R4768557
L2334325-2 CM_MW4-DP_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	0.564		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	25-AUG-19	25-AUG-19	R4769111
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-2 CM_MW4-DP_WG_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-19	25-AUG-19	R4769111
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Barium (Ba)-Dissolved	0.495		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Boron (B)-Dissolved	0.419		0.020	mg/L	25-AUG-19	27-AUG-19	R4769674
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	25-AUG-19	25-AUG-19	R4769111
Calcium (Ca)-Dissolved	7.49		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	25-AUG-19	25-AUG-19	R4769111
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	25-AUG-19	25-AUG-19	R4769111
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Lithium (Li)-Dissolved	0.907		0.0020	mg/L	25-AUG-19	25-AUG-19	R4769111
Magnesium (Mg)-Dissolved	1.94		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Manganese (Mn)-Dissolved	0.00399		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Molybdenum (Mo)-Dissolved	0.00042		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Potassium (K)-Dissolved	1.30		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	25-AUG-19	25-AUG-19	R4769111
Silicon (Si)-Dissolved	4.03		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-AUG-19	25-AUG-19	R4769111
Sodium (Na)-Dissolved	669		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Strontium (Sr)-Dissolved	1.01		0.00040	mg/L	25-AUG-19	25-AUG-19	R4769111
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-AUG-19	25-AUG-19	R4769111
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Uranium (U)-Dissolved	<0.000020	DLA	0.000020	mg/L	25-AUG-19	25-AUG-19	R4769111
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	25-AUG-19	25-AUG-19	R4769111
<b>Hardness</b>							
Hardness (as CaCO3)	26.7		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	818		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	50.8		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO3)	868		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.589	DLHC	0.050	mg/L		27-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	2.03	DLHC	0.25	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	472	DLHC	2.5	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2810		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.36	DLHC	0.10	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-2 CM_MW4-DP_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.9			%		27-AUG-19	
Anion Sum	30.8			meq/L		27-AUG-19	
Cation Sum	29.7			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	96.3		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.308	DLHC	0.025	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0098		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation redution potential by elect.</b>							
ORP	216		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0124		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	4.9	DLHC	1.5	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1580	DLHC	20	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b>							
Total Suspended Solids	2.0		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b>							
Turbidity	5.65		0.10	NTU		23-AUG-19	R4767812
<b>pH</b>							
pH	8.60		0.10	pH		23-AUG-19	R4768557
L2334325-3 CM_MW4-SH_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	0.412		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-19	25-AUG-19	R4769111
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-19	25-AUG-19	R4769111
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Barium (Ba)-Dissolved	0.274		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Boron (B)-Dissolved	0.362		0.010	mg/L	25-AUG-19	27-AUG-19	R4769674
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	25-AUG-19	25-AUG-19	R4769111
Calcium (Ca)-Dissolved	6.41		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-19	25-AUG-19	R4769111

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-3 CM_MW4-SH_WG_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Iron (Fe)-Dissolved	0.023		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Lithium (Li)-Dissolved	0.412		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Magnesium (Mg)-Dissolved	2.29		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Manganese (Mn)-Dissolved	0.00417		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Molybdenum (Mo)-Dissolved	0.000732		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Potassium (K)-Dissolved	1.02		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Selenium (Se)-Dissolved	<0.0050		0.050	ug/L	25-AUG-19	25-AUG-19	R4769111
Silicon (Si)-Dissolved	4.16		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Sodium (Na)-Dissolved	335		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Strontium (Sr)-Dissolved	0.676		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
<b>Hardness</b>							
Hardness (as CaCO3)	25.4		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	561		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	31.2		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO3)	593		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.393		0.0050	mg/L		27-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.56	DLHC	0.25	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	135	DLHC	2.5	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1410		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.41	DLHC	0.10	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Ion Balance	96.5		-100	%		27-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.8			%		27-AUG-19	
Anion Sum	15.7			meq/L		27-AUG-19	
Cation Sum	15.1			meq/L		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0102		0.0010	mg/L		22-AUG-19	R4765949

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-3 CM_MW4-SH_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 10:15 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	264		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0105		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b> Total Dissolved Solids	803	DLHC	20	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b> Total Suspended Solids	6.2		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b> Turbidity	1.05		0.10	NTU		23-AUG-19	R4767812
<b>pH</b> pH	8.58		0.10	pH		23-AUG-19	R4768557
L2334325-4 CM_MW6-DP_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 14:14 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	1.34		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	0.446		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	1.36		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-19	25-AUG-19	R4769111
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-19	25-AUG-19	R4769111
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Arsenic (As)-Dissolved	0.00040		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Barium (Ba)-Dissolved	0.285		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Boron (B)-Dissolved	0.321		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	25-AUG-19	25-AUG-19	R4769111
Calcium (Ca)-Dissolved	9.69		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-19	25-AUG-19	R4769111
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Iron (Fe)-Dissolved	0.069		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Lithium (Li)-Dissolved	0.339		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Magnesium (Mg)-Dissolved	3.27		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Manganese (Mn)-Dissolved	0.0452		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Molybdenum (Mo)-Dissolved	0.00366		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Potassium (K)-Dissolved	1.89		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Selenium (Se)-Dissolved	0.360		0.050	ug/L	25-AUG-19	25-AUG-19	R4769111
Silicon (Si)-Dissolved	4.07		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-4 CM_MW6-DP_WG_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 14:14							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	293		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Strontium (Sr)-Dissolved	0.835		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Tin (Sn)-Dissolved	0.00015		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Uranium (U)-Dissolved	0.000886		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
<b>Hardness</b>							
Hardness (as CaCO3)	37.7		0.50	mg/L		26-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	601		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	32.2		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO3)	633		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.401		0.0050	mg/L		26-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.167		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	36.7		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1200		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.464		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Ion Balance	97.5		-100	%		26-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.3			%		26-AUG-19	
Anion Sum	13.9			meq/L		26-AUG-19	
Cation Sum	13.5			meq/L		26-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0069		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation redution potential by elect.</b>							
ORP	228		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0121		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	8.77		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	725	DLHC	20	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.1		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b>							
Turbidity	0.70		0.10	NTU		23-AUG-19	R4767812

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.





## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-5 CM_MW6-SH_WG_2019-07-08_N Sampled By: DS/MC/KP/SH on 21-AUG-19 @ 14:06 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	1.3		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	204		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	4.2		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO <sub>3</sub> )	208		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0202		0.0050	mg/L		26-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.155		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	18.7		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	443		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.52		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.3			%		26-AUG-19	
Anion Sum	4.88			meq/L		26-AUG-19	
Cation Sum	4.66			meq/L		26-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	95.5		-100	%		26-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation redution potential by elect.</b>							
ORP	262		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	5.69		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	230	DLHC	20	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b>							
Turbidity	1.71		0.10	NTU		23-AUG-19	R4767812
<b>pH</b>							
pH	8.35		0.10	pH		23-AUG-19	R4768557
L2334325-6 CM_MNT_WS_2019-07-08_N Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00 Matrix: WS							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	25-AUG-19	25-AUG-19	R4769111

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-6 CM_MNT_WS_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00							
Matrix: WS							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					25-AUG-19	R4768175
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	25-AUG-19	25-AUG-19	R4769111
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Boron (B)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	25-AUG-19	25-AUG-19	R4769111
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	25-AUG-19	25-AUG-19	R4769111
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	25-AUG-19	25-AUG-19	R4769111
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	25-AUG-19	25-AUG-19	R4769111
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Potassium (K)-Dissolved	<0.050		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	25-AUG-19	25-AUG-19	R4769111
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	25-AUG-19	25-AUG-19	R4769111
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	25-AUG-19	25-AUG-19	R4769111
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	25-AUG-19	25-AUG-19	R4769111
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	25-AUG-19	25-AUG-19	R4769111
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	25-AUG-19	25-AUG-19	R4769111
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	25-AUG-19	25-AUG-19	R4769111
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	25-AUG-19	25-AUG-19	R4769111
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		26-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.8		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0081		0.0050	mg/L		26-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		23-AUG-19	R4769110

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-6 CM_MNT_WS_2019-07-08_N Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00 Matrix: WS							
<b>Electrical Conductivity (EC)</b> Conductivity (@ 25C)	<2.0		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b> Fluoride (F)	<0.020		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b> Ion Balance	0.0		-100	%		28-AUG-19	
<b>Ion Balance Calculation</b> Cation - Anion Balance	0.0			%		28-AUG-19	
Anion Sum	<0.10			meq/L		28-AUG-19	
Cation Sum	<0.10			meq/L		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b> Nitrate (as N)	<0.0050	HTD	0.0050	mg/L		27-AUG-19	R4769110
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation redution potential by elect.</b> ORP	353		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		23-AUG-19	R4767812
<b>pH</b> pH	5.39		0.10	pH		23-AUG-19	R4768557
L2334325-7 CM_TRP_WS_2019-07-08_N Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00 Matrix: WS							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		29-AUG-19	R4773274
Total Organic Carbon	<0.50		0.50	mg/L		24-AUG-19	R4768279
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	27-AUG-19	R4769129
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768640
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	28-AUG-19	28-AUG-19	R4771009
Dissolved Mercury Filtration Location	FIELD					28-AUG-19	R4770257
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					28-AUG-19	R4770258
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	27-AUG-19	R4769129
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	27-AUG-19	R4769129
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	27-AUG-19	R4769129
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	27-AUG-19	R4769129
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	27-AUG-19	R4769129
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	27-AUG-19	R4769129

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-7 CM_TRP_WS_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00							
Matrix: WS							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-AUG-19	27-AUG-19	R4769129
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	27-AUG-19	R4769129
Chromium (Cr)-Dissolved	0.00013	RRV	0.00010	mg/L	28-AUG-19	28-AUG-19	R4770355
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-AUG-19	27-AUG-19	R4769129
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	27-AUG-19	R4769129
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	27-AUG-19	R4769129
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	27-AUG-19	R4769129
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-19	27-AUG-19	R4769129
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	26-AUG-19	27-AUG-19	R4769129
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	27-AUG-19	R4769129
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	27-AUG-19	R4769129
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	27-AUG-19	R4769129
Potassium (K)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	27-AUG-19	R4769129
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-AUG-19	27-AUG-19	R4769129
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	27-AUG-19	R4769129
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	27-AUG-19	R4769129
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	27-AUG-19	R4769129
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	26-AUG-19	27-AUG-19	R4769129
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	27-AUG-19	R4769129
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	27-AUG-19	R4769129
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	27-AUG-19	R4769129
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	27-AUG-19	R4769129
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	27-AUG-19	R4769129
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-19	27-AUG-19	R4769129
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.1		1.0	mg/L		23-AUG-19	R4768538
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		23-AUG-19	R4768557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.110	RRV	0.0050	mg/L		26-AUG-19	R4769664
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769110
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		23-AUG-19	R4769110
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		23-AUG-19	R4768557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		23-AUG-19	R4769110
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-AUG-19	
Anion Sum	<0.10			meq/L		28-AUG-19	
Cation Sum	<0.10			meq/L		28-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-AUG-19	R4769110

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334325-7 CM_TRP_WS_2019-07-08_N							
Sampled By: DS/MC/KP/SH on 20-AUG-19 @ 12:00							
Matrix: WS							
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769110
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		22-AUG-19	R4765949
<b>Oxidation redution potential by elect.</b>							
ORP	416		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		24-AUG-19	R4768218
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		23-AUG-19	R4769110
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		27-AUG-19	R4773174
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		26-AUG-19	R4768837
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		23-AUG-19	R4767812
<b>pH</b>							
pH	5.27		0.10	pH		23-AUG-19	R4768557

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		with stannous chloride, and analyzed by CVAAS or CVAFS.	
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl	



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
mg/kg wwt - milligrams per kilogram based on wet weight of sample  
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 2 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768279</b>							
<b>WG3142918-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-AUG-19
<b>WG3142918-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	24-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768279</b>							
<b>WG3142918-2</b>	<b>LCS</b>							
Total Organic Carbon			106.8		%		80-120	24-AUG-19
<b>WG3142918-6</b>	<b>LCS</b>							
Total Organic Carbon			115.0		%		80-120	24-AUG-19
<b>WG3142918-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-AUG-19
<b>WG3142918-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	24-AUG-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-3</b>	<b>DUP</b>	<b>L2334325-7</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143904-2</b>	<b>LCS</b>							
Chloride (Cl)			104.3		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>WG3143904-4</b>	<b>MS</b>	<b>L2334325-7</b>						
Chloride (Cl)			106.8		%		75-125	23-AUG-19
<b>EC-L-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	23-AUG-19
<b>WG3143229-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-3</b>	<b>DUP</b>	<b>L2334325-7</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143904-2</b>	<b>LCS</b>							
Fluoride (F)			105.5		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 3 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>WG3143904-4</b>	<b>MS</b>	<b>L2334325-7</b>						
Fluoride (F)			111.2		%		75-125	23-AUG-19
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771009</b>							
<b>WG3145297-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.7		%		80-120	28-AUG-19
<b>WG3145297-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-AUG-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.2		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.8		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.4		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			96.5		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			101.8		%		80-120	25-AUG-19
Boron (B)-Dissolved			101.0		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			99.1		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.0		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.9		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.6		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			97.0		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			102.5		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			98.3		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.6		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			96.6		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			96.0		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.7		%		80-120	25-AUG-19
Potassium (K)-Dissolved			95.8		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			97.8		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			98.0		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.6		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			98.9		%		80-120	25-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 4 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			96.4		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			102.1		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			97.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			87.7		%		80-120	25-AUG-19
Uranium (U)-Dissolved			102.1		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.7		%		80-120	25-AUG-19
<b>WG3142803-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 5 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142803-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>Batch</b>	<b>R4769129</b>							
<b>WG3143395-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.8		%		80-120	27-AUG-19
Antimony (Sb)-Dissolved			91.6		%		80-120	27-AUG-19
Arsenic (As)-Dissolved			104.4		%		80-120	27-AUG-19
Barium (Ba)-Dissolved			104.5		%		80-120	27-AUG-19
Bismuth (Bi)-Dissolved			120.3	<b>MES</b>	%		80-120	27-AUG-19
Boron (B)-Dissolved			89.5		%		80-120	27-AUG-19
Cadmium (Cd)-Dissolved			98.4		%		80-120	27-AUG-19
Calcium (Ca)-Dissolved			90.9		%		80-120	27-AUG-19
Cobalt (Co)-Dissolved			103.0		%		80-120	27-AUG-19
Copper (Cu)-Dissolved			101.4		%		80-120	27-AUG-19
Iron (Fe)-Dissolved			83.3		%		80-120	27-AUG-19
Lead (Pb)-Dissolved			98.9		%		80-120	27-AUG-19
Lithium (Li)-Dissolved			92.7		%		80-120	27-AUG-19
Magnesium (Mg)-Dissolved			104.0		%		80-120	27-AUG-19
Manganese (Mn)-Dissolved			101.6		%		80-120	27-AUG-19
Molybdenum (Mo)-Dissolved			96.5		%		80-120	27-AUG-19
Nickel (Ni)-Dissolved			104.4		%		80-120	27-AUG-19
Potassium (K)-Dissolved			102.5		%		80-120	27-AUG-19
Selenium (Se)-Dissolved			99.8		%		80-120	27-AUG-19
Silicon (Si)-Dissolved			108.6		%		60-140	27-AUG-19
Silver (Ag)-Dissolved			94.1		%		80-120	27-AUG-19
Sodium (Na)-Dissolved			110.0		%		80-120	27-AUG-19
Strontium (Sr)-Dissolved			99.2		%		80-120	27-AUG-19
Thallium (Tl)-Dissolved			97.4		%		80-120	27-AUG-19
Tin (Sn)-Dissolved			95.7		%		80-120	27-AUG-19
Titanium (Ti)-Dissolved			99.0		%		80-120	27-AUG-19
Uranium (U)-Dissolved			105.7		%		80-120	27-AUG-19
Vanadium (V)-Dissolved			102.2		%		80-120	27-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 6 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769129</b>							
<b>WG3143395-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			100.1		%		80-120	27-AUG-19
<b>WG3143395-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-AUG-19
<b>Batch</b>	<b>R4770355</b>							
<b>WG3145305-10</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.0		%		80-120	28-AUG-19
Antimony (Sb)-Dissolved			96.4		%		80-120	28-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 7 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770355</b>							
<b>WG3145305-10 LCS</b>								
Arsenic (As)-Dissolved			99.4		%		80-120	28-AUG-19
Barium (Ba)-Dissolved			99.5		%		80-120	28-AUG-19
Bismuth (Bi)-Dissolved			97.8		%		80-120	28-AUG-19
Boron (B)-Dissolved			99.5		%		80-120	28-AUG-19
Cadmium (Cd)-Dissolved			98.9		%		80-120	28-AUG-19
Calcium (Ca)-Dissolved			99.2		%		80-120	28-AUG-19
Chromium (Cr)-Dissolved			101.5		%		80-120	28-AUG-19
Cobalt (Co)-Dissolved			100.6		%		80-120	28-AUG-19
Copper (Cu)-Dissolved			97.7		%		80-120	28-AUG-19
Iron (Fe)-Dissolved			103.3		%		80-120	28-AUG-19
Lead (Pb)-Dissolved			99.5		%		80-120	28-AUG-19
Lithium (Li)-Dissolved			102.7		%		80-120	28-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	28-AUG-19
Manganese (Mn)-Dissolved			101.6		%		80-120	28-AUG-19
Molybdenum (Mo)-Dissolved			98.8		%		80-120	28-AUG-19
Nickel (Ni)-Dissolved			100.2		%		80-120	28-AUG-19
Potassium (K)-Dissolved			101.0		%		80-120	28-AUG-19
Selenium (Se)-Dissolved			97.7		%		80-120	28-AUG-19
Silicon (Si)-Dissolved			95.7		%		60-140	28-AUG-19
Silver (Ag)-Dissolved			96.7		%		80-120	28-AUG-19
Sodium (Na)-Dissolved			106.3		%		80-120	28-AUG-19
Strontium (Sr)-Dissolved			100.9		%		80-120	28-AUG-19
Thallium (Tl)-Dissolved			98.1		%		80-120	28-AUG-19
Tin (Sn)-Dissolved			99.9		%		80-120	28-AUG-19
Titanium (Ti)-Dissolved			95.5		%		80-120	28-AUG-19
Uranium (U)-Dissolved			98.7		%		80-120	28-AUG-19
Vanadium (V)-Dissolved			101.5		%		80-120	28-AUG-19
Zinc (Zn)-Dissolved			97.7		%		80-120	28-AUG-19
<b>WG3145305-9 MB</b>		<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19





## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 8 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770355</b>							
<b>WG3145305-9</b>	<b>MB</b>	<b>NP</b>						
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769664</b>							
<b>WG3143694-23</b>	<b>DUP</b>	<b>L2334325-6</b>						
Ammonia as N		0.0081	0.0095		mg/L	16	20	26-AUG-19
<b>WG3143694-22</b>	<b>LCS</b>							
Ammonia as N			106.4		%		85-115	26-AUG-19
<b>WG3143694-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-19
<b>WG3143694-24</b>	<b>MS</b>	<b>L2334325-6</b>						
Ammonia as N			110.4		%		75-125	26-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 9 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-3</b>	<b>DUP</b>	<b>L2334325-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143904-2</b>	<b>LCS</b>							
Nitrite (as N)			104.0		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19
<b>WG3143904-4</b>	<b>MS</b>	<b>L2334325-7</b>						
Nitrite (as N)			110.9		%		75-125	23-AUG-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-3</b>	<b>DUP</b>	<b>L2334325-7</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143904-2</b>	<b>LCS</b>							
Nitrate (as N)			103.5		%		90-110	23-AUG-19
<b>WG3143904-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>WG3143904-4</b>	<b>MS</b>	<b>L2334325-7</b>						
Nitrate (as N)			108.3		%		75-125	23-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4773131</b>							
<b>WG3145474-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	27-AUG-19
<b>WG3145474-4</b>	<b>DUP</b>	<b>L2334325-1</b>						
ORP		336	324	J	mV	11.6	15	27-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768218</b>							
<b>WG3142667-22</b>	<b>LCS</b>							
Phosphorus (P)-Total			102.7		%		80-120	24-AUG-19
<b>WG3142667-21</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4768557</b>							
<b>WG3143229-14</b>	<b>LCS</b>							
pH			7.04		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 10 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch      R4765949								
<b>WG3140634-34</b> <b>LCS</b>								
Orthophosphate-Dissolved (as P)			102.3		%		80-120	22-AUG-19
<b>WG3140634-9</b> <b>MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch      R4769110								
<b>WG3143904-3</b> <b>DUP</b>								
Sulfate (SO4)		<b>L2334325-7</b> <0.30	<0.30	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3143904-2</b> <b>LCS</b>								
Sulfate (SO4)			105.2		%		90-110	23-AUG-19
<b>WG3143904-1</b> <b>MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>WG3143904-4</b> <b>MS</b>								
Sulfate (SO4)		<b>L2334325-7</b>	107.9		%		75-125	23-AUG-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch      R4773174								
<b>WG3144387-2</b> <b>LCS</b>								
Total Dissolved Solids			96.6		%		85-115	27-AUG-19
<b>WG3144387-1</b> <b>MB</b>								
Total Dissolved Solids			<10		mg/L		10	27-AUG-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch      R4773274								
<b>WG3145953-12</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			102.8		%		75-125	29-AUG-19
<b>WG3145953-15</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			95.9		%		75-125	29-AUG-19
<b>WG3145953-2</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			93.9		%		75-125	28-AUG-19
<b>WG3145953-20</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			97.0		%		75-125	29-AUG-19
<b>WG3145953-23</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			95.3		%		75-125	29-AUG-19
<b>WG3145953-1</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-AUG-19
<b>WG3145953-11</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-AUG-19
<b>WG3145953-14</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-AUG-19



## Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 11 of 13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4773274							
<b>WG3145953-19 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-AUG-19
<b>WG3145953-22 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	29-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4768837							
<b>WG3143202-14 LCS</b>								
Total Suspended Solids			91.7		%		85-115	26-AUG-19
<b>WG3143202-13 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4767812							
<b>WG3142369-11 LCS</b>								
Turbidity			96.5		%		85-115	23-AUG-19
<b>WG3142369-10 MB</b>								
Turbidity			<0.10		NTU		0.1	23-AUG-19

# Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 12 of 13

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334325

Report Date: 29-AUG-19

Page 13 of 13

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	20-AUG-19 12:05	27-AUG-19 10:30	0.25	166	hours	EHTR-FM
	2	21-AUG-19 10:15	27-AUG-19 10:30	0.25	144	hours	EHTR-FM
	3	21-AUG-19 10:15	27-AUG-19 10:30	0.25	144	hours	EHTR-FM
	4	21-AUG-19 14:14	27-AUG-19 10:30	0.25	140	hours	EHTR-FM
	5	21-AUG-19 14:06	27-AUG-19 10:30	0.25	140	hours	EHTR-FM
	6	20-AUG-19 12:00	27-AUG-19 10:30	0.25	167	hours	EHTR-FM
	7	20-AUG-19 12:00	27-AUG-19 10:30	0.25	167	hours	EHTR-FM
pH							
	1	20-AUG-19 12:05	23-AUG-19 13:00	0.25	73	hours	EHTR-FM
	2	21-AUG-19 10:15	23-AUG-19 13:00	0.25	51	hours	EHTR-FM
	3	21-AUG-19 10:15	23-AUG-19 13:00	0.25	51	hours	EHTR-FM
	4	21-AUG-19 14:14	23-AUG-19 13:00	0.25	47	hours	EHTR-FM
	5	21-AUG-19 14:06	23-AUG-19 13:00	0.25	47	hours	EHTR-FM
	6	20-AUG-19 12:00	23-AUG-19 13:00	0.25	73	hours	EHTR-FM
	7	20-AUG-19 12:00	23-AUG-19 13:00	0.25	73	hours	EHTR-FM

**Anions and Nutrients**

Nitrate in Water by IC (Low Level)

6	20-AUG-19 12:00	27-AUG-19 09:56	3	7	days	EHT
---	-----------------	-----------------	---	---	------	-----

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334325 were received on 22-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: COC\_WG\_Q3\_2019

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Scott.Holmgren@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kate.middleton@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	don.sacno@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2334325-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	PHIL	F	N	F	F	N	
CM_MW2-SH_WG_2019-07-08_N	CM_MW2-SH	WG	No	2019/08/20	12:05	G	5												
CM_MW4-DP_WG_2019-07-08_N	CM_MW4-DP	WG	No	2019/08/21	10:15	G	5												
CM_MW4-SH_WG_2019-07-08_N	CM_MW4-SH	WG	No	2019/08/21	10:15	G	5												
CM_MW6-DP_WG_2019-07-08_N	CM_MW6-DP	WG	No	2019/08/21	14:14	G	5												
CM_MW6-SH_WG_2019-07-08_N	CM_MW6-SH	WG	No	2019/08/21	14:06	G	5												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

RELINQUISHED BY/AFFILIATION

DATE/TIME

ACCEPTED BY/AFFILIATION

DATE/TIME

extras  
 CM\_MW4-SH-WG-2019-07-08-N  
 CM\_MW6-DP-WG-2019-07-08-N

VK

Opw  
Kl

SERVICE REQUEST (rush - subject to availability)

Regular (default) X	Sampler's Name	DS/MC/KP/SH	Mobile #
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time
Emergency (1 Business Day) - 100% surcharge			20190821 17:00
For Emergency <1 Day, ASAP or Weekend - Contact ALS			

Attorney

82



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 23-AUG-19  
Report Date: 03-SEP-19 10:17 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2334934  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-1 CM_MW3-DP_WG_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:16							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	0.59		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	0.0075		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00087		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.805		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.525		0.020	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	11.8		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	0.025		0.020	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	1.25		0.0020	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	4.82		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.0413		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.00281		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	0.0013		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	2.44		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	3.54		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	607		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	1.08		0.00040	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.000463		0.000020	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	49.4		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	208		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	3.8		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-1 CM_MW3-DP_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:16 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	212		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.651	DLHC	0.025	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	2.74	DLHC	0.25	mg/L		23-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	808	DLHC	2.5	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2830		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.52	DLHC	0.10	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.8			%		27-AUG-19	
Anion Sum	27.0			meq/L		27-AUG-19	
Cation Sum	27.5			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	102		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0052		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation reduction potential by elect.</b>							
ORP	315		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0071		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1500	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b>							
Turbidity	0.20		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.34		0.10	pH		26-AUG-19	R4769684
L2334934-2 CM_MW3-SH_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-2 CM_MW3-SH_WG_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.0842		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.023		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	0.0081		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	48.2		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	0.00029		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	0.00138		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0073		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	11.8		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.00253		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.000746		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	0.707		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	0.313		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	2.50		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	4.02		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	0.255		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.000214		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0099		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	169		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.1		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	168		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	168		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0069		0.0050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.15		0.50	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	337		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.122		0.020	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-2 CM_MW3-SH_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:15 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.3			%		27-AUG-19	
Anion Sum	3.73			meq/L		27-AUG-19	
Cation Sum	3.57			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	95.5		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0103		0.0050	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	469		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	15.9		0.30	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	189	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.14		0.10	pH		26-AUG-19	R4769684
L2334934-3 CM_MW7-DP_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.83		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	0.71	DLM	0.40	mg/L		30-AUG-19	R4778448
Total Organic Carbon	0.73		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	0.00025		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.0165		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.063		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	0.299		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	362		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	0.00078		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	0.69		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-3 CM_MW7-DP_WG_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:15							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00103		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0557		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	144		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.267		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.000163		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	0.0197		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	2.90		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	15.5		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	2.53		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	26.8		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	0.854		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	0.00033		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.00545		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0344		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	1500		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	32.7		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	386		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	386		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0080		0.0050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		27-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.7	DLHC	2.5	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2280		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.13	DLHC	0.10	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.9			%		27-AUG-19	
Anion Sum	33.0			meq/L		27-AUG-19	
Cation Sum	31.1			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	94.4		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	3.17	DLHC	0.025	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.181	DLHC	0.0050	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-3 CM_MW7-DP_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:15 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	349		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b> Sulfate (SO4)	1200	DLHC	1.5	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b> Total Dissolved Solids	2000	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b> Total Suspended Solids	7.6		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b> Turbidity	1.41		0.10	NTU		24-AUG-19	R4768077
<b>pH</b> pH	8.04		0.10	pH		26-AUG-19	R4769684
L2334934-4 CM_MW7-SH_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:17 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	3.53		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	4.77		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00047		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.0339		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.037		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	112		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	0.78		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	0.705		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0069		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	37.9		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.196		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.00140		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	0.00132		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	1.81		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	4.96		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-4 CM_MW7-SH_WG_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:17							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	21.8		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	0.428		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.00122		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0031		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	435		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	14.2		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	282		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	282		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0972		0.0050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		27-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	12.7		0.50	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	850		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.255		0.020	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.7			%		27-AUG-19	
Anion Sum	10.1			meq/L		27-AUG-19	
Cation Sum	9.74			meq/L		27-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	96.6		-100	%		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0082		0.0050	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0015		0.0010	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	413		-1000	mV		27-AUG-19	R4773131
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.113	DLHC	0.050	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	196		0.30	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	556	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	209		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b>							
Turbidity	0.96		0.10	NTU		24-AUG-19	R4768077

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-4 CM_MW7-SH_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:17 Matrix: WG							
<b>pH</b> pH	8.12		0.10	pH		26-AUG-19	R4769684
L2334934-5 CM_MW8_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.32		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	0.95		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	1.18		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00015		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.119		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.304		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	0.0071		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	70.2		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	0.45		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0665		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	19.5		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.195		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.000889		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	0.00069		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	2.92		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	6.12		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	52.2		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	5.04		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	0.00033		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.000568		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0077		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	256		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-5 CM_MW8_WG_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 14:00 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.9		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	321		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	321		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.868	DLHC	0.050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		27-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.09		0.50	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	657		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.312		0.020	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Ion Balance	97.8		-100	%		27-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.1			%		27-AUG-19	
Anion Sum	7.63			meq/L		27-AUG-19	
Cation Sum	7.46			meq/L		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0223		0.0050	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0010		0.0010	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	320		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0239		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	54.7		0.30	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	379	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	10.2		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b>							
Turbidity	11.4		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.16		0.10	pH		26-AUG-19	R4769684
L2334934-6 CM_NNP2_WS_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.68		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	0.79		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-6 CM_NNP2_WS_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	0.0860		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	0.024		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cadmium (Cd)-Dissolved	0.0076		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	48.8		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	0.00030		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	0.00138		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	0.0070		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	11.9		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	0.00260		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	0.000768		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	0.718		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	0.252		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	2.45		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	4.12		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	0.259		0.00020	mg/L	26-AUG-19	26-AUG-19	R4770053
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	0.000216		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	0.0099		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	171		0.50	mg/L		27-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.3		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	170		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	170		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0101		0.0050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.14		0.50	mg/L		23-AUG-19	R4769761

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-6 CM_NNP2_WS_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00 Matrix: WG							
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	329		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.120		0.020	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Ion Balance	95.8		-100	%		27-AUG-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-2.1			%		27-AUG-19	
Anion Sum	3.77			meq/L		27-AUG-19	
Cation Sum	3.61			meq/L		27-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0110		0.0050	mg/L		23-AUG-19	R4769761
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b>							
ORP	464		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	15.9		0.30	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	183	DLHC	20	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b>							
Turbidity	0.12		0.10	NTU		24-AUG-19	R4768077
<b>pH</b>							
pH	8.13		0.10	pH		26-AUG-19	R4769684
L2334934-7 CM_TRP_WS_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L		30-AUG-19	R4778448
Total Organic Carbon	<0.50		0.50	mg/L		25-AUG-19	R4768411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	26-AUG-19	26-AUG-19	R4770053
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	29-AUG-19	30-AUG-19	R4777943
Dissolved Mercury Filtration Location	FIELD					29-AUG-19	R4774972
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					26-AUG-19	R4768723
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	26-AUG-19	26-AUG-19	R4770053
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Boron (B)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-7 CM_TRP_WS_2019-07-08_N							
Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	26-AUG-19	26-AUG-19	R4770053
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	26-AUG-19	26-AUG-19	R4770053
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	26-AUG-19	26-AUG-19	R4770053
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	26-AUG-19	26-AUG-19	R4770053
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Potassium (K)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	26-AUG-19	26-AUG-19	R4770053
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	26-AUG-19	26-AUG-19	R4770053
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	26-AUG-19	27-AUG-19	R4771259
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	26-AUG-19	26-AUG-19	R4770053
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	26-AUG-19	26-AUG-19	R4770053
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	26-AUG-19	26-AUG-19	R4770053
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	26-AUG-19	26-AUG-19	R4770053
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	26-AUG-19	26-AUG-19	R4770053
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		28-AUG-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.7		1.0	mg/L		26-AUG-19	R4769704
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		26-AUG-19	R4769684
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		27-AUG-19	R4771632
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		23-AUG-19	R4769761
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		23-AUG-19	R4769761
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		26-AUG-19	R4769684
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		23-AUG-19	R4769761
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		28-AUG-19	
Anion Sum	<0.10			meq/L		28-AUG-19	
Cation Sum	<0.10			meq/L		28-AUG-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		28-AUG-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		23-AUG-19	R4769761

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334934-7 CM_TRP_WS_2019-07-08_N Sampled By: DS/MC/SH/KP on 22-AUG-19 @ 12:00 Matrix: WG							
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		23-AUG-19	R4769761
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		24-AUG-19	R4767870
<b>Oxidation redution potential by elect.</b> ORP	479		-1000	mV		28-AUG-19	R4775407
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		25-AUG-19	R4768451
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		23-AUG-19	R4769761
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		28-AUG-19	R4777452
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		27-AUG-19	R4773119
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		24-AUG-19	R4768077
<b>pH</b> pH	5.48		0.10	pH		26-AUG-19	R4769684

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-F-CL	Water	Total Kjeldahl Nitrogen by Fluorescence	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 1 of 12

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769704</b>							
<b>WG3144261-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			106.2		%		85-115	26-AUG-19
<b>WG3144261-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769684</b>							
<b>WG3144270-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	26-AUG-19
<b>WG3144270-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.0		%		85-115	26-AUG-19
<b>WG3144270-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-19
<b>WG3144270-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	26-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-3</b>	<b>DUP</b>	<b>L2334934-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	26-AUG-19
<b>WG3143505-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	26-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769761</b>							
<b>WG3144725-7</b>	<b>DUP</b>	<b>L2334934-7</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3144725-2</b>	<b>LCS</b>							
Bromide (Br)			110.6		%		85-115	23-AUG-19
<b>WG3144725-6</b>	<b>LCS</b>							
Bromide (Br)			98.3		%		85-115	23-AUG-19
<b>WG3144725-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>WG3144725-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>WG3144725-8</b>	<b>MS</b>	<b>L2334934-7</b>						
Bromide (Br)			112.7		%		75-125	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4768411							
<b>WG3143132-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			97.7		%		80-120	25-AUG-19
<b>WG3143132-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4768411							
<b>WG3143132-10</b>	<b>LCS</b>							
Total Organic Carbon			93.4		%		80-120	25-AUG-19
<b>WG3143132-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4769761							
<b>WG3144725-7</b>	<b>DUP</b>	<b>L2334934-7</b>						
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3144725-2</b>	<b>LCS</b>							
Chloride (Cl)			102.8		%		90-110	23-AUG-19
<b>WG3144725-6</b>	<b>LCS</b>							
Chloride (Cl)			102.8		%		90-110	23-AUG-19
<b>WG3144725-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>WG3144725-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>WG3144725-8</b>	<b>MS</b>	<b>L2334934-7</b>						
Chloride (Cl)			113.6		%		75-125	23-AUG-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4769684							
<b>WG3144270-11</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.9		%		90-110	26-AUG-19
<b>WG3144270-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.5		%		90-110	26-AUG-19
<b>WG3144270-10</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-AUG-19
<b>WG3144270-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	26-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4769761</b>							
<b>WG3144725-7</b>	<b>DUP</b>	<b>L2334934-7</b>						
Fluoride (F)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3144725-2</b>	<b>LCS</b>							
Fluoride (F)			107.7		%		90-110	23-AUG-19
<b>WG3144725-6</b>	<b>LCS</b>							
Fluoride (F)			107.2		%		90-110	23-AUG-19
<b>WG3144725-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>WG3144725-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>WG3144725-8</b>	<b>MS</b>	<b>L2334934-7</b>						
Fluoride (F)			117.7		%		75-125	23-AUG-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4777943</b>							
<b>WG3146604-7</b>	<b>DUP</b>	<b>L2334934-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	30-AUG-19
<b>WG3146604-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			99.0		%		80-120	30-AUG-19
<b>WG3146604-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	30-AUG-19
<b>WG3146604-8</b>	<b>MS</b>	<b>L2334934-2</b>						
Mercury (Hg)-Dissolved			109.3		%		70-130	30-AUG-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-3</b>	<b>DUP</b>	<b>L2334934-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	26-AUG-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-19
Arsenic (As)-Dissolved		0.00011	0.00012		mg/L	2.8	20	26-AUG-19
Barium (Ba)-Dissolved		0.0842	0.0832		mg/L	1.1	20	26-AUG-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-19
Boron (B)-Dissolved		0.023	0.023		mg/L	3.7	20	26-AUG-19
Cadmium (Cd)-Dissolved		0.0000081	0.0000102	J	mg/L	0.000002	0.00001	26-AUG-19
Calcium (Ca)-Dissolved		48.2	47.6		mg/L	1.1	20	26-AUG-19
Chromium (Cr)-Dissolved		0.00029	0.00029		mg/L	0.5	20	26-AUG-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-19
Copper (Cu)-Dissolved		0.00138	0.00140		mg/L	1.7	20	26-AUG-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-19



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-3</b>	<b>DUP</b>	<b>L2334934-2</b>						
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	26-AUG-19
Lithium (Li)-Dissolved		0.0073	0.0071		mg/L	2.9	20	26-AUG-19
Magnesium (Mg)-Dissolved		11.8	11.7		mg/L	1.0	20	26-AUG-19
Manganese (Mn)-Dissolved		0.00253	0.00255		mg/L	0.9	20	26-AUG-19
Molybdenum (Mo)-Dissolved		0.000746	0.000764		mg/L	2.4	20	26-AUG-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-19
Potassium (K)-Dissolved		0.707	0.698		mg/L	1.3	20	26-AUG-19
Selenium (Se)-Dissolved		0.000313	0.000320		mg/L	2.1	20	26-AUG-19
Silicon (Si)-Dissolved		2.50	2.49		mg/L	0.5	20	26-AUG-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-19
Sodium (Na)-Dissolved		4.02	4.00		mg/L	0.4	20	26-AUG-19
Strontium (Sr)-Dissolved		0.255	0.253		mg/L	0.6	20	26-AUG-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	26-AUG-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	26-AUG-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-AUG-19
Uranium (U)-Dissolved		0.000214	0.000210		mg/L	2.0	20	26-AUG-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	26-AUG-19
Zinc (Zn)-Dissolved		0.0099	0.0099		mg/L	0.2	20	26-AUG-19
<b>WG3143505-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.7		%		80-120	26-AUG-19
Antimony (Sb)-Dissolved			95.1		%		80-120	26-AUG-19
Arsenic (As)-Dissolved			97.7		%		80-120	26-AUG-19
Barium (Ba)-Dissolved			99.8		%		80-120	26-AUG-19
Bismuth (Bi)-Dissolved			96.3		%		80-120	26-AUG-19
Boron (B)-Dissolved			97.2		%		80-120	26-AUG-19
Cadmium (Cd)-Dissolved			97.3		%		80-120	26-AUG-19
Calcium (Ca)-Dissolved			94.0		%		80-120	26-AUG-19
Chromium (Cr)-Dissolved			99.2		%		80-120	26-AUG-19
Cobalt (Co)-Dissolved			97.8		%		80-120	26-AUG-19
Copper (Cu)-Dissolved			98.2		%		80-120	26-AUG-19
Iron (Fe)-Dissolved			100.6		%		80-120	26-AUG-19
Lead (Pb)-Dissolved			98.1		%		80-120	26-AUG-19
Lithium (Li)-Dissolved			96.8		%		80-120	26-AUG-19
Magnesium (Mg)-Dissolved			98.0		%		80-120	26-AUG-19



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-2</b>	<b>LCS</b>							
Manganese (Mn)-Dissolved			99.4		%		80-120	26-AUG-19
Molybdenum (Mo)-Dissolved			94.0		%		80-120	26-AUG-19
Nickel (Ni)-Dissolved			98.4		%		80-120	26-AUG-19
Potassium (K)-Dissolved			98.9		%		80-120	26-AUG-19
Selenium (Se)-Dissolved			98.5		%		80-120	26-AUG-19
Silicon (Si)-Dissolved			99.8		%		60-140	26-AUG-19
Silver (Ag)-Dissolved			93.7		%		80-120	26-AUG-19
Sodium (Na)-Dissolved			103.6		%		80-120	26-AUG-19
Strontium (Sr)-Dissolved			98.6		%		80-120	26-AUG-19
Thallium (Tl)-Dissolved			99.1		%		80-120	26-AUG-19
Tin (Sn)-Dissolved			94.9		%		80-120	26-AUG-19
Titanium (Ti)-Dissolved			94.3		%		80-120	26-AUG-19
Uranium (U)-Dissolved			103.3		%		80-120	26-AUG-19
Vanadium (V)-Dissolved			100.6		%		80-120	26-AUG-19
Zinc (Zn)-Dissolved			99.8		%		80-120	26-AUG-19
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	26-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	26-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	26-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4770053</b>							
<b>WG3143505-1</b>	<b>MB</b>	<b>NP</b>						
Potassium (K)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	26-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	26-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	26-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	26-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	26-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	26-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	26-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	26-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771632</b>							
<b>WG3144930-35</b>	<b>DUP</b>	<b>L2334934-6</b>						
Ammonia as N		0.0101	0.0121		mg/L	18	20	27-AUG-19
<b>WG3144930-34</b>	<b>LCS</b>							
Ammonia as N			103.7		%		85-115	27-AUG-19
<b>WG3144930-38</b>	<b>LCS</b>							
Ammonia as N			105.7		%		85-115	27-AUG-19
<b>WG3144930-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>WG3144930-37</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-AUG-19
<b>WG3144930-36</b>	<b>MS</b>	<b>L2334934-6</b>						
Ammonia as N			101.0		%		75-125	27-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769761</b>							
<b>WG3144725-7</b>	<b>DUP</b>	<b>L2334934-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-AUG-19
<b>WG3144725-2</b>	<b>LCS</b>							
Nitrite (as N)			105.9		%		90-110	23-AUG-19
<b>WG3144725-6</b>	<b>LCS</b>							
Nitrite (as N)			105.4		%		90-110	23-AUG-19
<b>WG3144725-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
Batch	R4769761							
<b>WG3144725-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19
<b>WG3144725-8</b>	<b>MS</b>	<b>L2334934-7</b>						
Nitrite (as N)			116.5		%		75-125	23-AUG-19
<b>NO3-L-IC-N-CL</b>								
Batch	R4769761							
<b>WG3144725-7</b>	<b>DUP</b>	<b>L2334934-7</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	27-AUG-19
<b>WG3144725-2</b>	<b>LCS</b>							
Nitrate (as N)			102.7		%		90-110	23-AUG-19
<b>WG3144725-6</b>	<b>LCS</b>							
Nitrate (as N)			102.8		%		90-110	23-AUG-19
<b>WG3144725-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>WG3144725-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>WG3144725-8</b>	<b>MS</b>	<b>L2334934-7</b>						
Nitrate (as N)			113.1		%		75-125	23-AUG-19
<b>ORP-CL</b>								
Batch	R4773131							
<b>WG3145474-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			217		mV		210-230	27-AUG-19
Batch	R4775407							
<b>WG3146400-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	28-AUG-19
<b>P-T-L-COL-CL</b>								
Batch	R4768451							
<b>WG3142895-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			110.5		%		80-120	25-AUG-19
<b>WG3142895-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	25-AUG-19
<b>PH-CL</b>								
Batch	R4769684							
<b>WG3144270-11</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	26-AUG-19
<b>WG3144270-8</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL Water</b>								
Batch	R4769684							
WG3144270-8	LCS							
pH			7.01		pH		6.9-7.1	26-AUG-19
<b>PO4-DO-L-COL-CL Water</b>								
Batch	R4767870							
WG3142434-4	LCS							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19
WG3142434-6	LCS							
Orthophosphate-Dissolved (as P)			99.3		%		80-120	24-AUG-19
WG3142434-3	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
WG3142434-5	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
WG3142434-16	MS	L2334934-7						
Orthophosphate-Dissolved (as P)			105.4		%		70-130	24-AUG-19
<b>SO4-IC-N-CL Water</b>								
Batch	R4769761							
WG3144725-7	DUP	L2334934-7						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	23-AUG-19
WG3144725-2	LCS							
Sulfate (SO4)			103.1		%		90-110	23-AUG-19
WG3144725-6	LCS							
Sulfate (SO4)			102.9		%		90-110	23-AUG-19
WG3144725-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
WG3144725-5	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
WG3144725-8	MS	L2334934-7						
Sulfate (SO4)			113.4		%		75-125	23-AUG-19
<b>SOLIDS-TDS-CL Water</b>								
Batch	R4777452							
WG3145045-6	DUP	L2334934-5						
Total Dissolved Solids		379	382		mg/L	0.7	20	28-AUG-19
WG3145045-5	LCS							
Total Dissolved Solids			94.6		%		85-115	28-AUG-19
WG3145045-8	LCS							
Total Dissolved Solids			99.1		%		85-115	28-AUG-19
WG3145045-4	MB							







## Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-F-CL</b>	<b>Water</b>							
Batch	R4778448							
<b>WG3148809-33 MB</b>								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	30-AUG-19
<b>WG3148809-7 MB</b>								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	30-AUG-19
<b>WG3148809-9 MB</b>								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	30-AUG-19
<b>WG3148809-18 MS</b>		<b>L2334934-6</b>						
Total Kjeldahl Nitrogen			96.9		%		70-130	30-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4773119							
<b>WG3144490-6 LCS</b>								
Total Suspended Solids			103.8		%		85-115	27-AUG-19
<b>WG3144490-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	27-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4768077							
<b>WG3142660-8 LCS</b>								
Turbidity			94.5		%		85-115	24-AUG-19
<b>WG3142660-7 MB</b>								
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2334934

Report Date: 03-SEP-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.							
	1	22-AUG-19 12:16	28-AUG-19 08:30	0.25	140	hours	EHTR-FM
	2	22-AUG-19 12:15	28-AUG-19 08:30	0.25	140	hours	EHTR-FM
	3	22-AUG-19 14:15	28-AUG-19 08:30	0.25	138	hours	EHTR-FM
	4	22-AUG-19 14:17	27-AUG-19 15:05	0.25	121	hours	EHTR-FM
	5	22-AUG-19 14:00	28-AUG-19 08:30	0.25	138	hours	EHTR-FM
	6	22-AUG-19 12:00	28-AUG-19 08:30	0.25	140	hours	EHTR-FM
	7	22-AUG-19 12:00	28-AUG-19 08:30	0.25	140	hours	EHTR-FM
pH							
	1	22-AUG-19 12:16	26-AUG-19 09:00	0.25	93	hours	EHTR-FM
	2	22-AUG-19 12:15	26-AUG-19 09:00	0.25	93	hours	EHTR-FM
	3	22-AUG-19 14:15	26-AUG-19 09:00	0.25	91	hours	EHTR-FM
	4	22-AUG-19 14:17	26-AUG-19 09:00	0.25	91	hours	EHTR-FM
	5	22-AUG-19 14:00	26-AUG-19 09:00	0.25	91	hours	EHTR-FM
	6	22-AUG-19 12:00	26-AUG-19 09:00	0.25	93	hours	EHTR-FM
	7	22-AUG-19 12:00	26-AUG-19 09:00	0.25	93	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334934 were received on 23-AUG-19 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>				<b>OTHER INFO</b>				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Soit.Holmgren@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	Jay.Jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kate.middleton@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	don.sacno@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ANALYSIS REQUESTED					
								F	N	F	F	N	
								H2S04	H2S04	HCl	HNO3	NONE	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	
CM_MW3-DP_WG_2019-07-08_N	CM_MW3-DP	WG	No	2019/08/22	12:16	G	5	1	1	1	1	1	
CM_MW3-SH_WG_2019-07-08_N	CM_MW3-SH	WG	No	2019/08/22	12:15	G	5	1	1	1	1	1	
								1	1	1	1	1	
								1	1	1	1	1	
CM_MW7-DP_WG_2019-07-08_N	CM_MW7-DP	WG	No	2019/08/22	14:15	G	5	1	1	1	1	1	
CM_MW7-SH_WG_2019-07-08_N	CM_MW7-SH	WG	No	2019/08/22	14:17	G	5	1	1	1	1	1	
CM_MW8_WG_2019-07-08_N	CM_MW8	WG	No	2019/08/22	14:00	G	5	1	1	1	1	1	
CM_NNP2_WS_2019-07-08_N	CM_NNP2	WG	No	2019/08/22		G	5	1	1	1	1	1	
CM_TRP_WS_2019-07-08_N	CM_TRP	WG	No	2019/08/22		G	5	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	8/23 8:40

SERVICE REQUEST (rush - subject to availability)			
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	DS/MC/SH/KP	Mobile #	
Sampler's Signature <i>[Signature]</i>	Date/Time		20190822 17:00

*[Handwritten mark]*



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 29-AUG-19  
Report Date: 06-SEP-19 11:20 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2338280  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338280-1 CM_MW5-DP_WG_2019-07-08_N							
Sampled By: MC/SH on 28-AUG-19 @ 14:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		30-AUG-19	R4779480
Total Kjeldahl Nitrogen	0.627		0.050	mg/L		04-SEP-19	R4783064
Total Organic Carbon	<0.50		0.50	mg/L		30-AUG-19	R4779480
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-AUG-19	01-SEP-19	R4782190
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778830
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-SEP-19	04-SEP-19	R4782391
Dissolved Mercury Filtration Location	FIELD					04-SEP-19	R4782684
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778830
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-AUG-19	01-SEP-19	R4782190
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Barium (Ba)-Dissolved	1.27		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Boron (B)-Dissolved	0.130		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	31-AUG-19	01-SEP-19	R4782190
Calcium (Ca)-Dissolved	72.0		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-AUG-19	01-SEP-19	R4782190
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Iron (Fe)-Dissolved	1.15		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Lithium (Li)-Dissolved	0.0682		0.0010	mg/L	31-AUG-19	01-SEP-19	R4782190
Magnesium (Mg)-Dissolved	26.5		0.10	mg/L	31-AUG-19	01-SEP-19	R4782190
Manganese (Mn)-Dissolved	0.0512		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Molybdenum (Mo)-Dissolved	0.00171		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Nickel (Ni)-Dissolved	0.00082		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Potassium (K)-Dissolved	3.60		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	31-AUG-19	01-SEP-19	R4782190
Silicon (Si)-Dissolved	6.52		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	31-AUG-19	04-SEP-19	R4783022
Sodium (Na)-Dissolved	65.6		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Strontium (Sr)-Dissolved	2.02		0.00020	mg/L	31-AUG-19	01-SEP-19	R4782190
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	31-AUG-19	01-SEP-19	R4782190
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Uranium (U)-Dissolved	0.000117		0.000010	mg/L	31-AUG-19	01-SEP-19	R4782190
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Zinc (Zn)-Dissolved	0.0012		0.0010	mg/L	31-AUG-19	01-SEP-19	R4782190
<b>Hardness</b>							
Hardness (as CaCO3)	289		0.50	mg/L		04-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.5		1.0	mg/L		30-AUG-19	R4779479
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	412		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338280-1 CM_MW5-DP_WG_2019-07-08_N Sampled By: MC/SH on 28-AUG-19 @ 14:50 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	412		1.0	mg/L		30-AUG-19	R4779469
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.651		0.050	mg/L		30-AUG-19	R4782035
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	9.73		0.50	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	724		2.0	uS/cm		30-AUG-19	R4779469
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.326		0.020	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		04-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.6			%		04-SEP-19	
Anion Sum	8.54			meq/L		04-SEP-19	
Cation Sum	8.83			meq/L		04-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		29-AUG-19	R4778146
<b>Oxidation reduction potential by elect.</b>							
ORP	407		-1000	mV		29-AUG-19	R4777724
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0028		0.0020	mg/L		03-SEP-19	R4782095
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	0.46		0.30	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	399	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.7		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	14.4		0.10	NTU		29-AUG-19	R4777726
<b>pH</b>							
pH	8.21		0.10	pH		30-AUG-19	R4779469
L2338280-2 CM_MW5-SH_WG_2019-07-08_N Sampled By: MC/SH on 28-AUG-19 @ 14:51 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.65		0.50	mg/L		30-AUG-19	R4779480
Total Kjeldahl Nitrogen	0.309		0.050	mg/L		04-SEP-19	R4783064
Total Organic Carbon	0.66		0.50	mg/L		30-AUG-19	R4779480
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	31-AUG-19	01-SEP-19	R4782190
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778830
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-SEP-19	04-SEP-19	R4782391
Dissolved Mercury Filtration Location	FIELD					04-SEP-19	R4782684
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338280-2 CM_MW5-SH_WG_2019-07-08_N							
Sampled By: MC/SH on 28-AUG-19 @ 14:51							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					31-AUG-19	R4778830
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	31-AUG-19	01-SEP-19	R4782190
Antimony (Sb)-Dissolved	0.00043		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Arsenic (As)-Dissolved	0.00021		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Barium (Ba)-Dissolved	0.0738		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Boron (B)-Dissolved	0.042		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Cadmium (Cd)-Dissolved	0.0429		0.0050	ug/L	31-AUG-19	01-SEP-19	R4782190
Calcium (Ca)-Dissolved	140		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Chromium (Cr)-Dissolved	0.00024		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	31-AUG-19	01-SEP-19	R4782190
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Lithium (Li)-Dissolved	0.0262		0.0010	mg/L	31-AUG-19	01-SEP-19	R4782190
Magnesium (Mg)-Dissolved	67.9		0.10	mg/L	31-AUG-19	01-SEP-19	R4782190
Manganese (Mn)-Dissolved	0.00021		0.00010	mg/L	31-AUG-19	01-SEP-19	R4782190
Molybdenum (Mo)-Dissolved	0.00368		0.000050	mg/L	31-AUG-19	01-SEP-19	R4782190
Nickel (Ni)-Dissolved	0.00142		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Potassium (K)-Dissolved	2.54		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Selenium (Se)-Dissolved	6.75		0.050	ug/L	31-AUG-19	01-SEP-19	R4782190
Silicon (Si)-Dissolved	2.27		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	31-AUG-19	01-SEP-19	R4782190
Sodium (Na)-Dissolved	14.7		0.050	mg/L	31-AUG-19	01-SEP-19	R4782190
Strontium (Sr)-Dissolved	0.445		0.00020	mg/L	31-AUG-19	01-SEP-19	R4782190
Thallium (Tl)-Dissolved	0.000053		0.000010	mg/L	31-AUG-19	01-SEP-19	R4782190
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	31-AUG-19	01-SEP-19	R4782190
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	31-AUG-19	01-SEP-19	R4782190
Uranium (U)-Dissolved	0.00448		0.000010	mg/L	31-AUG-19	01-SEP-19	R4782190
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	31-AUG-19	01-SEP-19	R4782190
Zinc (Zn)-Dissolved	0.0019		0.0010	mg/L	31-AUG-19	01-SEP-19	R4782190
<b>Hardness</b>							
Hardness (as CaCO3)	628		0.50	mg/L		03-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	9.0		1.0	mg/L		30-AUG-19	R4779479
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	228		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		30-AUG-19	R4779469
Alkalinity, Total (as CaCO3)	228		1.0	mg/L		30-AUG-19	R4779469
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0065		0.0050	mg/L		30-AUG-19	R4782035
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	5.5	DLHC	2.5	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1100		2.0	uS/cm		30-AUG-19	R4779469
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.23	DLHC	0.10	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2338280-2 CM_MW5-SH_WG_2019-07-08_N							
Sampled By: MC/SH on 28-AUG-19 @ 14:51							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	99.2		-100	%		03-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.4			%		03-SEP-19	
Anion Sum	13.4			meq/L		03-SEP-19	
Cation Sum	13.3			meq/L		03-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	2.65	DLHC	0.025	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0055		0.0010	mg/L		29-AUG-19	R4778146
<b>Oxidation redution potential by elect.</b>							
ORP	485		-1000	mV		29-AUG-19	R4777724
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0071	DLM	0.0050	mg/L		03-SEP-19	R4782095
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	406	DLHC	1.5	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	843	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.1		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	0.26		0.10	NTU		29-AUG-19	R4777726
<b>pH</b>							
pH	8.05		0.10	pH		30-AUG-19	R4779469

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
--------------	-------	-----------	--------------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 1 of 10

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4779479							
<b>WG3149669-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.8		%		85-115	30-AUG-19
<b>WG3149669-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	30-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4779469							
<b>WG3149661-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			102.4		%		85-115	30-AUG-19
<b>WG3149661-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	30-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4782190							
<b>WG3149264-3</b>	<b>DUP</b>	<b>L2338280-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-SEP-19
<b>WG3149264-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			89.7		%		80-120	01-SEP-19
<b>WG3149264-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-SEP-19
<b>WG3149264-4</b>	<b>MS</b>	<b>L2338280-1</b>						
Beryllium (Be)-Dissolved			95.9		%		70-130	01-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4778982							
<b>WG3149458-2</b>	<b>LCS</b>							
Bromide (Br)			100.3		%		85-115	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4779480							
<b>WG3149829-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			108.9		%		80-120	30-AUG-19
<b>WG3149829-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4779480							
<b>WG3149829-2</b>	<b>LCS</b>							
Total Organic Carbon			113.1		%		80-120	30-AUG-19
<b>WG3149829-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4779480							
WG3149829-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	30-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4778982							
WG3149458-2	LCS							
Chloride (Cl)			99.5		%		90-110	30-AUG-19
WG3149458-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	30-AUG-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4779469							
WG3149661-5	LCS							
Conductivity (@ 25C)			99.7		%		90-110	30-AUG-19
WG3149661-4	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	30-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4778982							
WG3149458-2	LCS							
Fluoride (F)			101.6		%		90-110	30-AUG-19
WG3149458-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	30-AUG-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4782391							
WG3151509-7	DUP	L2338280-2						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-SEP-19
WG3151509-6	LCS							
Mercury (Hg)-Dissolved			94.0		%		80-120	04-SEP-19
WG3151509-5	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	04-SEP-19
WG3151509-8	MS	L2338280-1						
Mercury (Hg)-Dissolved			102.6		%		70-130	04-SEP-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								
Batch	R4782190							
WG3149264-3	DUP	L2338280-2						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-SEP-19
Antimony (Sb)-Dissolved		0.00043	0.00041		mg/L	4.3	20	01-SEP-19
Arsenic (As)-Dissolved		0.00021	0.00022		mg/L	2.6	20	01-SEP-19



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782190</b>							
<b>WG3149264-3</b>	<b>DUP</b>	<b>L2338280-2</b>						
Barium (Ba)-Dissolved		0.0738	0.0739		mg/L	0.1	20	01-SEP-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-19
Boron (B)-Dissolved		0.042	0.041		mg/L	2.7	20	01-SEP-19
Cadmium (Cd)-Dissolved		0.0000429	0.0000390		mg/L	9.7	20	01-SEP-19
Calcium (Ca)-Dissolved		140	132		mg/L	5.5	20	01-SEP-19
Chromium (Cr)-Dissolved		0.00024	0.00026		mg/L	9.1	20	01-SEP-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-SEP-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-SEP-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-19
Lithium (Li)-Dissolved		0.0262	0.0251		mg/L	4.1	20	01-SEP-19
Magnesium (Mg)-Dissolved		67.9	67.8		mg/L	0.2	20	01-SEP-19
Manganese (Mn)-Dissolved		0.00021	0.00021		mg/L	1.9	20	01-SEP-19
Molybdenum (Mo)-Dissolved		0.00368	0.00348		mg/L	5.6	20	01-SEP-19
Nickel (Ni)-Dissolved		0.00142	0.00148		mg/L	4.0	20	01-SEP-19
Potassium (K)-Dissolved		2.54	2.53		mg/L	0.2	20	01-SEP-19
Selenium (Se)-Dissolved		0.00675	0.00724		mg/L	7.0	20	01-SEP-19
Silicon (Si)-Dissolved		2.27	2.34		mg/L	3.1	20	01-SEP-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-19
Sodium (Na)-Dissolved		14.7	14.9		mg/L	0.9	20	01-SEP-19
Strontium (Sr)-Dissolved		0.445	0.431		mg/L	3.2	20	01-SEP-19
Thallium (Tl)-Dissolved		0.000053	0.000051		mg/L	5.2	20	01-SEP-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-SEP-19
Uranium (U)-Dissolved		0.00448	0.00438		mg/L	2.2	20	01-SEP-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-SEP-19
Zinc (Zn)-Dissolved		0.0019	0.0018		mg/L	5.1	20	01-SEP-19
<b>WG3149264-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			110.8		%		80-120	01-SEP-19
Antimony (Sb)-Dissolved			81.8		%		80-120	01-SEP-19
Arsenic (As)-Dissolved			103.4		%		80-120	01-SEP-19
Barium (Ba)-Dissolved			103.7		%		80-120	01-SEP-19
Bismuth (Bi)-Dissolved			79.7	MES	%		80-120	01-SEP-19
Boron (B)-Dissolved			89.8		%		80-120	01-SEP-19





## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782190</b>							
<b>WG3149264-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			104.8		%		80-120	01-SEP-19
Calcium (Ca)-Dissolved			90.8		%		80-120	01-SEP-19
Chromium (Cr)-Dissolved			105.1		%		80-120	01-SEP-19
Cobalt (Co)-Dissolved			102.5		%		80-120	01-SEP-19
Copper (Cu)-Dissolved			101.9		%		80-120	01-SEP-19
Iron (Fe)-Dissolved			93.9		%		80-120	01-SEP-19
Lead (Pb)-Dissolved			82.9		%		80-120	01-SEP-19
Lithium (Li)-Dissolved			88.4		%		80-120	01-SEP-19
Magnesium (Mg)-Dissolved			105.6		%		80-120	01-SEP-19
Manganese (Mn)-Dissolved			107.0		%		80-120	01-SEP-19
Molybdenum (Mo)-Dissolved			88.7		%		80-120	01-SEP-19
Nickel (Ni)-Dissolved			103.5		%		80-120	01-SEP-19
Potassium (K)-Dissolved			105.0		%		80-120	01-SEP-19
Selenium (Se)-Dissolved			97.5		%		80-120	01-SEP-19
Silicon (Si)-Dissolved			106.8		%		60-140	01-SEP-19
Silver (Ag)-Dissolved			87.2		%		80-120	01-SEP-19
Sodium (Na)-Dissolved			105.2		%		80-120	01-SEP-19
Strontium (Sr)-Dissolved			92.6		%		80-120	01-SEP-19
Thallium (Tl)-Dissolved			80.7		%		80-120	01-SEP-19
Tin (Sn)-Dissolved			87.2		%		80-120	01-SEP-19
Titanium (Ti)-Dissolved			96.7		%		80-120	01-SEP-19
Uranium (U)-Dissolved			84.0		%		80-120	01-SEP-19
Vanadium (V)-Dissolved			106.1		%		80-120	01-SEP-19
Zinc (Zn)-Dissolved			97.8		%		80-120	01-SEP-19
<b>WG3149264-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782190</b>							
<b>WG3149264-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-SEP-19
<b>WG3149264-4</b>	<b>MS</b>	<b>L2338280-1</b>						
Aluminum (Al)-Dissolved			103.6		%		70-130	01-SEP-19
Antimony (Sb)-Dissolved			98.3		%		70-130	01-SEP-19
Arsenic (As)-Dissolved			111.4		%		70-130	01-SEP-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Bismuth (Bi)-Dissolved			82.0		%		70-130	01-SEP-19
Boron (B)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Cadmium (Cd)-Dissolved			103.5		%		70-130	01-SEP-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Chromium (Cr)-Dissolved			103.6		%		70-130	01-SEP-19
Cobalt (Co)-Dissolved			99.98		%		70-130	01-SEP-19
Copper (Cu)-Dissolved			97.4		%		70-130	01-SEP-19
Iron (Fe)-Dissolved			86.9		%		70-130	01-SEP-19



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782190</b>							
<b>WG3149264-4</b>	<b>MS</b>	<b>L2338280-1</b>						
Lead (Pb)-Dissolved			88.8		%		70-130	01-SEP-19
Lithium (Li)-Dissolved			82.9		%		70-130	01-SEP-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Molybdenum (Mo)-Dissolved			98.9		%		70-130	01-SEP-19
Nickel (Ni)-Dissolved			98.2		%		70-130	01-SEP-19
Potassium (K)-Dissolved			101.0		%		70-130	01-SEP-19
Selenium (Se)-Dissolved			107.9		%		70-130	01-SEP-19
Silicon (Si)-Dissolved			87.0		%		70-130	01-SEP-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	01-SEP-19
Thallium (Tl)-Dissolved			85.1		%		70-130	01-SEP-19
Tin (Sn)-Dissolved			96.6		%		70-130	01-SEP-19
Titanium (Ti)-Dissolved			103.6		%		70-130	01-SEP-19
Uranium (U)-Dissolved			94.4		%		70-130	01-SEP-19
Vanadium (V)-Dissolved			106.2		%		70-130	01-SEP-19
Zinc (Zn)-Dissolved			95.3		%		70-130	01-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782035</b>							
<b>WG3148808-18</b>	<b>LCS</b>							
Ammonia as N			106.2		%		85-115	30-AUG-19
<b>WG3148808-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	30-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-2</b>	<b>LCS</b>							
Nitrite (as N)			102.2		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-2</b>	<b>LCS</b>							
Nitrate (as N)			99.9		%		90-110	30-AUG-19
<b>WG3149458-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-AUG-19



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4777724							
WG3147832-11	CRM	CL-ORP						
ORP			224		mV		210-230	29-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4782095							
WG3150644-10	LCS							
Phosphorus (P)-Total			107.6		%		80-120	03-SEP-19
WG3150644-9	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	03-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4779469							
WG3149661-5	LCS							
pH			7.01		pH		6.9-7.1	30-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4778146							
WG3147483-31	LCS							
Orthophosphate-Dissolved (as P)			95.0		%		80-120	29-AUG-19
WG3147483-8	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4778982							
WG3149458-2	LCS							
Sulfate (SO4)			100.7		%		90-110	30-AUG-19
WG3149458-1	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4782704							
WG3149053-11	LCS							
Total Dissolved Solids			104.5		%		85-115	03-SEP-19
WG3149053-10	MB							
Total Dissolved Solids			<10		mg/L		10	03-SEP-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4783064							
WG3151739-14	LCS							
Total Kjeldahl Nitrogen			98.4		%		75-125	04-SEP-19
WG3151739-2	LCS							



## Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4783064</b>							
<b>WG3151739-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.9		%		75-125	04-SEP-19
<b>WG3151739-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			102.0		%		75-125	04-SEP-19
<b>WG3151739-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-19
<b>WG3151739-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-19
<b>WG3151739-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-SEP-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4782759</b>							
<b>WG3150265-2</b>	<b>LCS</b>							
Total Suspended Solids			95.6		%		85-115	03-SEP-19
<b>WG3150265-1</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	03-SEP-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4777726</b>							
<b>WG3147836-8</b>	<b>LCS</b>							
Turbidity			96.0		%		85-115	29-AUG-19
<b>WG3147836-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-AUG-19

# Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2338280

Report Date: 06-SEP-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-AUG-19 14:50	29-AUG-19 17:45	0.25	27	hours	EHTR-FM
	2	28-AUG-19 14:51	29-AUG-19 17:45	0.25	27	hours	EHTR-FM
pH	1	28-AUG-19 14:50	30-AUG-19 12:00	0.25	45	hours	EHTR-FM
	2	28-AUG-19 14:51	30-AUG-19 12:00	0.25	45	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2338280 were received on 29-AUG-19 09:00.

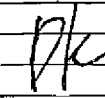
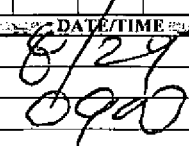
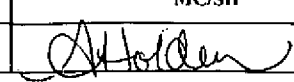
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> COC_WG_Q3_2019		<b>TURNAROUND TIME:</b>				<b>RUSH:</b>					
<b>PROJECT/CLIENT INFO</b>						<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job#		Coal Mountain Operations				Lab Name			Report Format / Distribution		
Project Manager		Jay Jones				ALS Calgary			Excel PDF EDD		
Email		Jay.Jones@teck.com				Lab Contact			Email 1:		
Address		PO Box 3000				Lyudmyla Shvets			Scott.Holmgren@teck.com X X X		
City		Sparwood		Province BC		Email			Email 2:		
Postal Code		V0B 2G0		Country Canada		Lyudmyla.Shvets@atsglobal.com			teckcoal@equisonline.com		
Phone Number		1-250-425-7321				Address			Email 3:		
						2559 29th St. NE			jay.jones@teck.com X X X		
						City			Email 4:		
		Calgary		Province AB					kate.middleton@teck.com X X X		
		Postal Code		T1Y 7B5		Country			Email 5:		
		Canada				Canada			don.sacino@teck.com X X X		
		Phone Number				403 407 1800			PO number		
									611069		

SAMPLE DETAILS							ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N
CM_MW5-DP_WG_2019-07-08_N	CM_MW5-DP	WG	No	2019/08/28	14:50	G	5						1	1	1	1	1
CM_MW5-SH_WG_2019-07-08_N	CM_MW5-SH	WG	No	2019/08/28	14:51	G	5						1	1	1	1	1

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>						
														
<b>SERVICE REQUEST (rush - subject to availability)</b>														
Regular (default) <input checked="" type="checkbox"/>					<b>Sampler's Name</b>		MCSH		<b>Mobile #</b>					
Priority (2-3 business days) - 50% surcharge					<b>Sampler's Signature</b>				<b>Date/Time</b>		20190828 17:00			
Emergency (1 Business Day) - 100% surcharge														
For Emergency <1 Day, ASAP or Weekend - Contact ALS														

801





TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 30-AUG-19  
Report Date: 05-SEP-19 17:53 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2339505  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-1 CM_MW1-DP_WG_2019-07-08_N							
Sampled By: DS/SH on 29-AUG-19 @ 15:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.19		0.50	mg/L		03-SEP-19	R4782102
Total Kjeldahl Nitrogen	0.754		0.050	mg/L		03-SEP-19	R4782181
Total Organic Carbon	1.26		0.50	mg/L		03-SEP-19	R4782102
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-SEP-19	05-SEP-19	R4783384
Dissolved Mercury Filtration Location	FIELD					05-SEP-19	R4783645
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-SEP-19	05-SEP-19	R4783266
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Arsenic (As)-Dissolved	0.00175		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Barium (Ba)-Dissolved	9.91		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Boron (B)-Dissolved	0.252		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	04-SEP-19	05-SEP-19	R4783266
Calcium (Ca)-Dissolved	32.2		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Chromium (Cr)-Dissolved	0.00013		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cobalt (Co)-Dissolved	0.57		0.10	ug/L	04-SEP-19	05-SEP-19	R4783266
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Iron (Fe)-Dissolved	0.053		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Lithium (Li)-Dissolved	0.720		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Magnesium (Mg)-Dissolved	19.1		0.10	mg/L	04-SEP-19	05-SEP-19	R4783266
Manganese (Mn)-Dissolved	0.124		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Molybdenum (Mo)-Dissolved	0.00365		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Nickel (Ni)-Dissolved	0.00063		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Potassium (K)-Dissolved	5.45		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	04-SEP-19	05-SEP-19	R4783266
Silicon (Si)-Dissolved	4.98		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Sodium (Na)-Dissolved	255		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Strontium (Sr)-Dissolved	2.36		0.00020	mg/L	04-SEP-19	05-SEP-19	R4783266
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Tin (Sn)-Dissolved	0.00027		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Uranium (U)-Dissolved	0.000541		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Zinc (Zn)-Dissolved	0.0052		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
<b>Hardness</b>							
Hardness (as CaCO3)	159		0.50	mg/L		05-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.1		1.0	mg/L		03-SEP-19	R4782574
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	356		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-1 CM_MW1-DP_WG_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 15:00 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	356		1.0	mg/L		03-SEP-19	R4782557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.590	DLHC	0.050	mg/L		04-SEP-19	R4783089
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.85	DLHC	0.25	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	228	DLHC	2.5	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		03-SEP-19	R4782557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.20	DLHC	0.10	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	3.3			%		05-SEP-19	
Anion Sum	13.6			meq/L		05-SEP-19	
Cation Sum	14.5			meq/L		05-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	107		-100	%		05-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0079		0.0010	mg/L		30-AUG-19	R4778713
<b>Oxidation reduction potential by elect.</b>							
ORP	290		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0560		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	752	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	32.2		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	19.0		0.10	NTU		30-AUG-19	R4778601
<b>pH</b>							
pH	8.16		0.10	pH		03-SEP-19	R4782557
L2339505-2 CM_MW1-OB_WG_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 12:22 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.93		0.50	mg/L		03-SEP-19	R4782102
Total Kjeldahl Nitrogen	0.134		0.050	mg/L		03-SEP-19	R4782181
Total Organic Carbon	1.21		0.50	mg/L		03-SEP-19	R4782102
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-SEP-19	05-SEP-19	R4783384
Dissolved Mercury Filtration Location	FIELD					05-SEP-19	R4783645
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-2 CM_MW1-OB_WG_2019-07-08_N							
Sampled By: DS/SH on 29-AUG-19 @ 12:22							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-SEP-19	05-SEP-19	R4783266
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Arsenic (As)-Dissolved	0.00017		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Barium (Ba)-Dissolved	0.115		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Boron (B)-Dissolved	0.053		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cadmium (Cd)-Dissolved	0.0691		0.0050	ug/L	04-SEP-19	05-SEP-19	R4783266
Calcium (Ca)-Dissolved	147		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Chromium (Cr)-Dissolved	0.00052		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	04-SEP-19	05-SEP-19	R4783266
Copper (Cu)-Dissolved	0.00278		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Lead (Pb)-Dissolved	0.000079		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Lithium (Li)-Dissolved	0.0297		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Magnesium (Mg)-Dissolved	54.7		0.10	mg/L	04-SEP-19	05-SEP-19	R4783266
Manganese (Mn)-Dissolved	0.00027		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Molybdenum (Mo)-Dissolved	0.000294		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Nickel (Ni)-Dissolved	0.00126		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Potassium (K)-Dissolved	2.14		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Selenium (Se)-Dissolved	2.43		0.050	ug/L	04-SEP-19	05-SEP-19	R4783266
Silicon (Si)-Dissolved	3.85		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Sodium (Na)-Dissolved	64.6		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Strontium (Sr)-Dissolved	0.392		0.00020	mg/L	04-SEP-19	05-SEP-19	R4783266
Thallium (Tl)-Dissolved	0.000021		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Tin (Sn)-Dissolved	0.00011		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Uranium (U)-Dissolved	0.00121		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Zinc (Zn)-Dissolved	0.0741		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
<b>Hardness</b>							
Hardness (as CaCO3)	593		0.50	mg/L		05-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	18.8		1.0	mg/L		03-SEP-19	R4782574
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	318		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Total (as CaCO3)	318		1.0	mg/L		03-SEP-19	R4782557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0134		0.0050	mg/L		04-SEP-19	R4783089
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	62.9	DLHC	2.5	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1200		2.0	uS/cm		03-SEP-19	R4782557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.11	DLHC	0.10	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-2 CM_MW1-OB_WG_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 12:22 Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		05-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.3			%		05-SEP-19	
Anion Sum	14.6			meq/L		05-SEP-19	
Cation Sum	14.7			meq/L		05-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.396	DLHC	0.025	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0052		0.0010	mg/L		30-AUG-19	R4778713
<b>Oxidation redution potential by elect.</b>							
ORP	329		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0064	DLM	0.0050	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	310	DLHC	1.5	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	843	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	0.13		0.10	NTU		30-AUG-19	R4778601
<b>pH</b>							
pH	7.91		0.10	pH		03-SEP-19	R4782557
L2339505-3 CM_MW1-SH_WG_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 13:10 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.14		0.50	mg/L		03-SEP-19	R4782102
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-SEP-19	R4782181
Total Organic Carbon	0.95	DTC	0.50	mg/L		03-SEP-19	R4782102
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-SEP-19	05-SEP-19	R4783384
Dissolved Mercury Filtration Location	FIELD					05-SEP-19	R4783645
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-SEP-19	05-SEP-19	R4783266
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Arsenic (As)-Dissolved	0.00204		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Barium (Ba)-Dissolved	0.322		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Boron (B)-Dissolved	0.057		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Calcium (Ca)-Dissolved	27.0		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cobalt (Co)-Dissolved	0.18		0.10	ug/L	04-SEP-19	05-SEP-19	R4783266

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-3 CM_MW1-SH_WG_2019-07-08_N							
Sampled By: DS/SH on 29-AUG-19 @ 13:10							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Iron (Fe)-Dissolved	0.473		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Lithium (Li)-Dissolved	0.0207		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Magnesium (Mg)-Dissolved	11.0		0.10	mg/L	04-SEP-19	05-SEP-19	R4783266
Manganese (Mn)-Dissolved	0.143		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Molybdenum (Mo)-Dissolved	0.0601		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Potassium (K)-Dissolved	1.08		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	04-SEP-19	05-SEP-19	R4783266
Silicon (Si)-Dissolved	3.56		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Sodium (Na)-Dissolved	199		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Strontium (Sr)-Dissolved	0.299		0.00020	mg/L	04-SEP-19	05-SEP-19	R4783266
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Uranium (U)-Dissolved	0.000668		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
<b>Hardness</b>							
Hardness (as CaCO3)	113		0.50	mg/L		05-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.4		1.0	mg/L		03-SEP-19	R4782574
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	202		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		03-SEP-19	R4782557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0515		0.0050	mg/L		04-SEP-19	R4783089
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.842		0.050	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	193		0.50	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	988		2.0	uS/cm		03-SEP-19	R4782557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.837		0.020	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Ion Balance	113		-100	%		05-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.1			%		05-SEP-19	
Anion Sum	9.71			meq/L		05-SEP-19	
Cation Sum	11.0			meq/L		05-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		30-AUG-19	R4778713

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-3 CM_MW1-SH_WG_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 13:10 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	87.6		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0049		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b> Sulfate (SO4)	9.54		0.30	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b> Total Dissolved Solids	555	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b> Total Suspended Solids	1.3		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b> Turbidity	3.64		0.10	NTU		30-AUG-19	R4778601
<b>pH</b> pH	8.15		0.10	pH		03-SEP-19	R4782557
L2339505-4 CM_NNT_WS_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		03-SEP-19	R4782102
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		03-SEP-19	R4782181
Total Organic Carbon	<0.50		0.50	mg/L		03-SEP-19	R4782102
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-SEP-19	05-SEP-19	R4783384
Dissolved Mercury Filtration Location	FIELD					05-SEP-19	R4783645
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-SEP-19	05-SEP-19	R4783266
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Boron (B)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	04-SEP-19	05-SEP-19	R4783266
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	04-SEP-19	05-SEP-19	R4783266
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	04-SEP-19	05-SEP-19	R4783266
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Potassium (K)-Dissolved	<0.050		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	04-SEP-19	05-SEP-19	R4783266
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-4 CM_NNT_WS_2019-07-08_N							
Sampled By: DS/SH on 29-AUG-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	04-SEP-19	05-SEP-19	R4783266
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		05-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.2		1.0	mg/L		03-SEP-19	R4782574
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		03-SEP-19	R4782557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		04-SEP-19	R4783089
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		03-SEP-19	R4782557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		05-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		05-SEP-19	
Anion Sum	<0.10			meq/L		05-SEP-19	
Cation Sum	<0.10			meq/L		05-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		30-AUG-19	R4778713
<b>Oxidation redution potential by elect.</b>							
ORP	247		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<0.30		0.30	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		30-AUG-19	R4778601

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-4 CM_NNT_WS_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 12:00 Matrix: WG							
<b>pH</b> pH	5.67		0.10	pH		03-SEP-19	R4782557
L2339505-5 CM_NNP_WS_2019-07-08_N Sampled By: DS/SH on 29-AUG-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.27		0.50	mg/L		03-SEP-19	R4782102
Total Kjeldahl Nitrogen	0.057		0.050	mg/L		03-SEP-19	R4782181
Total Organic Carbon	1.10		0.50	mg/L		03-SEP-19	R4782102
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	05-SEP-19	05-SEP-19	R4783384
Dissolved Mercury Filtration Location	FIELD					05-SEP-19	R4783645
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					04-SEP-19	R4783038
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	04-SEP-19	05-SEP-19	R4783266
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Arsenic (As)-Dissolved	0.00195		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Barium (Ba)-Dissolved	0.329		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Boron (B)-Dissolved	0.058		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cadmium (Cd)-Dissolved	<0.020	DLM	0.020	ug/L	04-SEP-19	05-SEP-19	R4783266
Calcium (Ca)-Dissolved	27.5		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Cobalt (Co)-Dissolved	0.19		0.10	ug/L	04-SEP-19	05-SEP-19	R4783266
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Iron (Fe)-Dissolved	0.481		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Lithium (Li)-Dissolved	0.0212		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
Magnesium (Mg)-Dissolved	11.3		0.10	mg/L	04-SEP-19	05-SEP-19	R4783266
Manganese (Mn)-Dissolved	0.143		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Molybdenum (Mo)-Dissolved	0.0589		0.000050	mg/L	04-SEP-19	05-SEP-19	R4783266
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Potassium (K)-Dissolved	1.08		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Selenium (Se)-Dissolved	0.138		0.050	ug/L	04-SEP-19	05-SEP-19	R4783266
Silicon (Si)-Dissolved	3.67		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Sodium (Na)-Dissolved	200		0.050	mg/L	04-SEP-19	05-SEP-19	R4783266
Strontium (Sr)-Dissolved	0.293		0.00020	mg/L	04-SEP-19	05-SEP-19	R4783266
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	04-SEP-19	05-SEP-19	R4783266
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	04-SEP-19	05-SEP-19	R4783266
Uranium (U)-Dissolved	0.000682		0.000010	mg/L	04-SEP-19	05-SEP-19	R4783266
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	04-SEP-19	05-SEP-19	R4783266
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	04-SEP-19	05-SEP-19	R4783266
<b>Hardness</b>							
Hardness (as CaCO3)	115		0.50	mg/L		05-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339505-5 CM_NNP_WS_2019-07-08_N							
Sampled By: DS/SH on 29-AUG-19 @ 12:00							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	2.2		1.0	mg/L		03-SEP-19	R4782574
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	204		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		03-SEP-19	R4782557
Alkalinity, Total (as CaCO <sub>3</sub> )	204		1.0	mg/L		03-SEP-19	R4782557
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0500		0.0050	mg/L		04-SEP-19	R4783089
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.786		0.050	mg/L		30-AUG-19	R4778982
<b>Chloride in Water by IC</b>							
Chloride (Cl)	194		0.50	mg/L		30-AUG-19	R4778982
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	969		2.0	uS/cm		03-SEP-19	R4782557
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.871		0.020	mg/L		30-AUG-19	R4778982
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.2			%		05-SEP-19	
Anion Sum	9.78			meq/L		05-SEP-19	
Cation Sum	11.1			meq/L		05-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	113		-100	%		05-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		30-AUG-19	R4778982
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		30-AUG-19	R4778982
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0019		0.0010	mg/L		30-AUG-19	R4778713
<b>Oxidation redution potential by elect.</b>							
ORP	106		-1000	mV		30-AUG-19	R4778885
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0067		0.0020	mg/L		04-SEP-19	R4783025
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	9.47		0.30	mg/L		30-AUG-19	R4778982
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	547	DLHC	20	mg/L		03-SEP-19	R4782704
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		03-SEP-19	R4782759
<b>Turbidity</b>							
Turbidity	4.16		0.10	NTU		30-AUG-19	R4778601
<b>pH</b>							
pH	8.21		0.10	pH		03-SEP-19	R4782557

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
		This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.	

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_2019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 1 of 11

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782574</b>							
<b>WG3150146-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			107.1		%		85-115	03-SEP-19
<b>WG3150146-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	03-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782557</b>							
<b>WG3151278-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.8		%		85-115	03-SEP-19
<b>WG3151278-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4783266</b>							
<b>WG3151958-3</b>	<b>DUP</b>	<b>L2339505-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	05-SEP-19
<b>WG3151958-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			103.8		%		80-120	05-SEP-19
<b>WG3151958-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	05-SEP-19
<b>WG3151958-4</b>	<b>MS</b>	<b>L2339505-1</b>						
Beryllium (Be)-Dissolved			108.5		%		70-130	05-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4778982</b>							
<b>WG3149458-10</b>	<b>LCS</b>							
Bromide (Br)			97.8		%		85-115	30-AUG-19
<b>WG3149458-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4782102</b>							
<b>WG3150724-7</b>	<b>DUP</b>	<b>L2339505-4</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-SEP-19
<b>WG3150724-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.3		%		80-120	01-SEP-19
<b>WG3150724-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			103.3		%		80-120	03-SEP-19
<b>WG3150724-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-SEP-19
<b>WG3150724-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4782102							
<b>WG3150724-5 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	03-SEP-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4782102							
<b>WG3150724-7 DUP</b>		<b>L2339505-4</b>						
Total Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-SEP-19
<b>WG3150724-2 LCS</b>								
Total Organic Carbon			107.4		%		80-120	01-SEP-19
<b>WG3150724-6 LCS</b>								
Total Organic Carbon			107.4		%		80-120	03-SEP-19
<b>WG3150724-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	01-SEP-19
<b>WG3150724-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	03-SEP-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4778982							
<b>WG3149458-10 LCS</b>								
Chloride (Cl)			99.3		%		90-110	30-AUG-19
<b>WG3149458-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	30-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4782557							
<b>WG3151278-5 LCS</b>								
Conductivity (@ 25C)			100.4		%		90-110	03-SEP-19
<b>WG3151278-4 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	03-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4778982							
<b>WG3149458-10 LCS</b>								
Fluoride (F)			102.4		%		90-110	30-AUG-19
<b>WG3149458-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	30-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4783384</b>							
<b>WG3152785-7</b>	<b>DUP</b>	<b>L2339505-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	05-SEP-19
<b>WG3152785-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.0		%		80-120	05-SEP-19
<b>WG3152785-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	05-SEP-19
<b>WG3152785-8</b>	<b>MS</b>	<b>L2339505-2</b>						
Mercury (Hg)-Dissolved			96.4		%		70-130	05-SEP-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4783266</b>							
<b>WG3151958-3</b>	<b>DUP</b>	<b>L2339505-2</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	05-SEP-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-19
Arsenic (As)-Dissolved		0.00017	0.00018		mg/L	7.0	20	05-SEP-19
Barium (Ba)-Dissolved		0.115	0.115		mg/L	0.2	20	05-SEP-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	05-SEP-19
Boron (B)-Dissolved		0.053	0.053		mg/L	0.4	20	05-SEP-19
Cadmium (Cd)-Dissolved		0.0000691	0.0000681		mg/L	1.5	20	05-SEP-19
Calcium (Ca)-Dissolved		147	148		mg/L	0.4	20	05-SEP-19
Chromium (Cr)-Dissolved		0.00052	0.00049		mg/L	6.5	20	05-SEP-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	05-SEP-19
Copper (Cu)-Dissolved		0.00278	0.00281		mg/L	1.1	20	05-SEP-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-SEP-19
Lead (Pb)-Dissolved		0.000079	0.000080		mg/L	1.0	20	05-SEP-19
Lithium (Li)-Dissolved		0.0297	0.0296		mg/L	0.2	20	05-SEP-19
Magnesium (Mg)-Dissolved		54.7	54.8		mg/L	0.2	20	05-SEP-19
Manganese (Mn)-Dissolved		0.00027	0.00025		mg/L	7.2	20	05-SEP-19
Molybdenum (Mo)-Dissolved		0.000294	0.000293		mg/L	0.5	20	05-SEP-19
Nickel (Ni)-Dissolved		0.00126	0.00128		mg/L	1.9	20	05-SEP-19
Potassium (K)-Dissolved		2.14	2.16		mg/L	0.6	20	05-SEP-19
Selenium (Se)-Dissolved		0.00243	0.00241		mg/L	0.8	20	05-SEP-19
Silicon (Si)-Dissolved		3.85	3.84		mg/L	0.4	20	05-SEP-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	05-SEP-19
Sodium (Na)-Dissolved		64.6	64.7		mg/L	0.1	20	05-SEP-19
Strontium (Sr)-Dissolved		0.392	0.397		mg/L	1.4	20	05-SEP-19
Thallium (Tl)-Dissolved		0.000021	0.000020		mg/L	5.4	20	05-SEP-19





## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4783266</b>							
<b>WG3151958-3</b>	<b>DUP</b>	<b>L2339505-2</b>						
Tin (Sn)-Dissolved		0.00011	0.00011		mg/L	3.7	20	05-SEP-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	05-SEP-19
Uranium (U)-Dissolved		0.00121	0.00123		mg/L	1.4	20	05-SEP-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	05-SEP-19
Zinc (Zn)-Dissolved		0.0741	0.0740		mg/L	0.2	20	05-SEP-19
<b>WG3151958-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.2		%		80-120	05-SEP-19
Antimony (Sb)-Dissolved			100.8		%		80-120	05-SEP-19
Arsenic (As)-Dissolved			101.6		%		80-120	05-SEP-19
Barium (Ba)-Dissolved			100.2		%		80-120	05-SEP-19
Bismuth (Bi)-Dissolved			103.5		%		80-120	05-SEP-19
Boron (B)-Dissolved			97.8		%		80-120	05-SEP-19
Cadmium (Cd)-Dissolved			103.6		%		80-120	05-SEP-19
Calcium (Ca)-Dissolved			104.2		%		80-120	05-SEP-19
Chromium (Cr)-Dissolved			102.6		%		80-120	05-SEP-19
Cobalt (Co)-Dissolved			102.1		%		80-120	05-SEP-19
Copper (Cu)-Dissolved			102.4		%		80-120	05-SEP-19
Iron (Fe)-Dissolved			96.3		%		80-120	05-SEP-19
Lead (Pb)-Dissolved			102.5		%		80-120	05-SEP-19
Lithium (Li)-Dissolved			100.2		%		80-120	05-SEP-19
Magnesium (Mg)-Dissolved			113.8		%		80-120	05-SEP-19
Manganese (Mn)-Dissolved			101.4		%		80-120	05-SEP-19
Molybdenum (Mo)-Dissolved			101.8		%		80-120	05-SEP-19
Nickel (Ni)-Dissolved			102.4		%		80-120	05-SEP-19
Potassium (K)-Dissolved			103.8		%		80-120	05-SEP-19
Selenium (Se)-Dissolved			101.6		%		80-120	05-SEP-19
Silicon (Si)-Dissolved			105.3		%		60-140	05-SEP-19
Silver (Ag)-Dissolved			101.2		%		80-120	05-SEP-19
Sodium (Na)-Dissolved			111.3		%		80-120	05-SEP-19
Strontium (Sr)-Dissolved			104.1		%		80-120	05-SEP-19
Thallium (Tl)-Dissolved			100.1		%		80-120	05-SEP-19
Tin (Sn)-Dissolved			101.5		%		80-120	05-SEP-19
Titanium (Ti)-Dissolved			102.1		%		80-120	05-SEP-19
Uranium (U)-Dissolved			96.4		%		80-120	05-SEP-19



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4783266</b>							
<b>WG3151958-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			104.3		%		80-120	05-SEP-19
Zinc (Zn)-Dissolved			101.5		%		80-120	05-SEP-19
<b>WG3151958-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	05-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	05-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	05-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	05-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	05-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	05-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	05-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	05-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	05-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	05-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	05-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	05-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	05-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	05-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	05-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	05-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	05-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	05-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	05-SEP-19
<b>WG3151958-4</b>	<b>MS</b>	<b>L2339505-1</b>						
Aluminum (Al)-Dissolved			109.6		%		70-130	05-SEP-19



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4783266</b>							
<b>WG3151958-4</b>	<b>MS</b>	<b>L2339505-1</b>						
Antimony (Sb)-Dissolved			104.8		%		70-130	05-SEP-19
Arsenic (As)-Dissolved			116.3		%		70-130	05-SEP-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Bismuth (Bi)-Dissolved			86.5		%		70-130	05-SEP-19
Boron (B)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Cadmium (Cd)-Dissolved			100.6		%		70-130	05-SEP-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Chromium (Cr)-Dissolved			101.9		%		70-130	05-SEP-19
Cobalt (Co)-Dissolved			100.3		%		70-130	05-SEP-19
Copper (Cu)-Dissolved			96.5		%		70-130	05-SEP-19
Iron (Fe)-Dissolved			101.2		%		70-130	05-SEP-19
Lead (Pb)-Dissolved			93.7		%		70-130	05-SEP-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Molybdenum (Mo)-Dissolved			106.0		%		70-130	05-SEP-19
Nickel (Ni)-Dissolved			98.3		%		70-130	05-SEP-19
Potassium (K)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Selenium (Se)-Dissolved			128.6		%		70-130	05-SEP-19
Silicon (Si)-Dissolved			104.5		%		70-130	05-SEP-19
Silver (Ag)-Dissolved			89.2		%		70-130	05-SEP-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	05-SEP-19
Thallium (Tl)-Dissolved			90.2		%		70-130	05-SEP-19
Tin (Sn)-Dissolved			101.3		%		70-130	05-SEP-19
Titanium (Ti)-Dissolved			107.6		%		70-130	05-SEP-19
Uranium (U)-Dissolved			94.8		%		70-130	05-SEP-19
Vanadium (V)-Dissolved			109.1		%		70-130	05-SEP-19
Zinc (Zn)-Dissolved			99.4		%		70-130	05-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4783089</b>							
<b>WG3152042-3</b>	<b>DUP</b>	<b>L2339505-4</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-SEP-19
<b>WG3152042-2</b>	<b>LCS</b>							



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch R4783089								
WG3152042-2	LCS							
Ammonia as N			104.2		%		85-115	04-SEP-19
WG3152042-1	MB							
Ammonia as N			<0.0050		mg/L		0.005	04-SEP-19
WG3152042-4	MS	L2339505-4						
Ammonia as N			106.8		%		75-125	04-SEP-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4778982								
WG3149458-10	LCS							
Nitrite (as N)			101.6		%		90-110	30-AUG-19
WG3149458-9	MB							
Nitrite (as N)			<0.0010		mg/L		0.001	30-AUG-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch R4778982								
WG3149458-10	LCS							
Nitrate (as N)			99.6		%		90-110	30-AUG-19
WG3149458-9	MB							
Nitrate (as N)			<0.0050		mg/L		0.005	30-AUG-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch R4778885								
WG3149149-3	CRM	CL-ORP						
ORP			226		mV		210-230	30-AUG-19
WG3149149-9	DUP	L2339505-5						
ORP		106	101	J	mV	4.5	15	30-AUG-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch R4783025								
WG3151930-71	LCS							
Phosphorus (P)-Total			104.0		%		80-120	04-SEP-19
WG3151930-72	LCS							
Phosphorus (P)-Total			118.0		%		80-120	04-SEP-19
WG3151930-67	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-19
WG3151930-68	MB							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-SEP-19
<b>PH-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4782557							
WG3151278-5	LCS							
pH			7.03		pH		6.9-7.1	03-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4778713							
WG3148964-8	LCS							
Orthophosphate-Dissolved (as P)			95.0		%		80-120	30-AUG-19
WG3148964-2	MB							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	30-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4778982							
WG3149458-10	LCS							
Sulfate (SO4)			99.5		%		90-110	30-AUG-19
WG3149458-9	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	30-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4782704							
WG3149053-8	LCS							
Total Dissolved Solids			99.8		%		85-115	03-SEP-19
WG3149053-7	MB							
Total Dissolved Solids			<10		mg/L		10	03-SEP-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4782181							
WG3150638-19	DUP	L2339505-4						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-SEP-19
WG3150638-10	LCS							
Total Kjeldahl Nitrogen			98.4		%		75-125	03-SEP-19
WG3150638-14	LCS							
Total Kjeldahl Nitrogen			98.4		%		75-125	03-SEP-19
WG3150638-18	LCS							
Total Kjeldahl Nitrogen			98.8		%		75-125	03-SEP-19
WG3150638-22	LCS							
Total Kjeldahl Nitrogen			107.8		%		75-125	03-SEP-19
WG3150638-25	LCS							
Total Kjeldahl Nitrogen			97.6		%		75-125	03-SEP-19
WG3150638-13	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
WG3150638-17	MB							



## Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4782181</b>							
<b>WG3150638-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-21 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-24 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-SEP-19
<b>WG3150638-20 MS</b>		<b>L2339505-4</b>						
Total Kjeldahl Nitrogen			114.5		%		70-130	03-SEP-19
<b>TSS-L-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4782759</b>							
<b>WG3150265-4 LCS</b>								
Total Suspended Solids			89.3		%		85-115	03-SEP-19
<b>WG3150265-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-SEP-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4778601</b>							
<b>WG3148963-8 LCS</b>								
Turbidity			96.0		%		85-115	30-AUG-19
<b>WG3148963-7 MB</b>								
Turbidity			<0.10		NTU		0.1	30-AUG-19

# Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2339505

Report Date: 05-SEP-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	29-AUG-19 15:00	30-AUG-19 19:00	0.25	28	hours	EHTR-FM
	2	29-AUG-19 12:22	30-AUG-19 19:00	0.25	31	hours	EHTR-FM
	3	29-AUG-19 13:10	30-AUG-19 19:00	0.25	30	hours	EHTR-FM
	4	29-AUG-19 12:00	30-AUG-19 19:00	0.25	31	hours	EHTR-FM
	5	29-AUG-19 12:00	30-AUG-19 19:00	0.25	31	hours	EHTR-FM
pH							
	1	29-AUG-19 15:00	03-SEP-19 10:00	0.25	115	hours	EHTR-FM
	2	29-AUG-19 12:22	03-SEP-19 10:00	0.25	118	hours	EHTR-FM
	3	29-AUG-19 13:10	03-SEP-19 10:00	0.25	117	hours	EHTR-FM
	4	29-AUG-19 12:00	03-SEP-19 10:00	0.25	118	hours	EHTR-FM
	5	29-AUG-19 12:00	03-SEP-19 10:00	0.25	118	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2339505 were received on 30-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

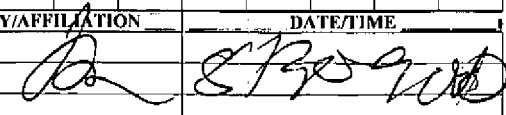
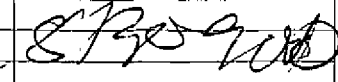
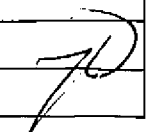
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: <b>COC_WG_Q3_2019</b>		TURNAROUND TIME:			RUSH:							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Scott.Holmgren@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	Jay.Jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kate.middleton@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	don.sacino@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

SAMPLE DETAILS								ANALYSIS REQUESTED						Filtered - F: Field, L: Lab, FL: Field & Lab, N: None						
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N							
								PRESERV.	H2SO4	H2SO4	HCl	HNO3	NONE							
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA							
CM_MW1-DP_WG_2019-07-08_N	CM_MW1-DP	WG	No	2019/07/08	15:00	G	5		1	1	1	1	1							
CM_MW1-OB_WG_2019-07-08_N	CM_MW1-OB	WG	No	2019/07/08	12:22	G	5		1	1	1	1	1							
CM_MW1-SH_WG_2019-07-08_N	CM_MW1-SH	WG	No	2019/07/08	13:10	G	5		1	1	1	1	1							
CM_NNT_WS_2019-07-08_N	CM_NNT	WG	No	2019/07/08		G	5		1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS		RELINQUISHED BY/AFFILIATION		DATE/TIME	ACCEPTED BY/AFFILIATION		DATE/TIME
							
SERVICE REQUEST (rush - subject to availability)							
Regular (default) X		Sampler's Name		DS/SH		Mobile #	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature				Date/Time	
Emergency (1 Business Day) - 100% surcharge						20190829 17:00	
For Emergency <1 Day, ASAP or Weekend - Contact ALS							



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 06-SEP-19  
Report Date: 13-SEP-19 17:52 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2342849  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_09052019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2342849-1 CM_MW7-DP_WG_2019-09-05_N							
Sampled By: MC/SH/VS on 05-SEP-19 @ 12:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		10-SEP-19	R4797308
Total Kjeldahl Nitrogen	0.460		0.050	mg/L		10-SEP-19	R4795109
Total Organic Carbon	<0.50		0.50	mg/L		10-SEP-19	R4797308
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	10-SEP-19	10-SEP-19	R4794788
Dissolved Metals Filtration Location	FIELD					10-SEP-19	R4791633
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-SEP-19	11-SEP-19	R4795914
Dissolved Mercury Filtration Location	FIELD					10-SEP-19	R4793989
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					10-SEP-19	R4791633
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-SEP-19	10-SEP-19	R4794788
Antimony (Sb)-Dissolved	0.00020		0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Barium (Ba)-Dissolved	0.0132		0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Boron (B)-Dissolved	0.056		0.020	mg/L	10-SEP-19	10-SEP-19	R4794788
Cadmium (Cd)-Dissolved	0.169		0.010	ug/L	10-SEP-19	10-SEP-19	R4794788
Calcium (Ca)-Dissolved	378		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Cobalt (Co)-Dissolved	1.02		0.20	ug/L	10-SEP-19	10-SEP-19	R4794788
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	10-SEP-19	10-SEP-19	R4794788
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	10-SEP-19	10-SEP-19	R4794788
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Lithium (Li)-Dissolved	0.0630		0.0020	mg/L	10-SEP-19	10-SEP-19	R4794788
Magnesium (Mg)-Dissolved	150		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Manganese (Mn)-Dissolved	0.375		0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Molybdenum (Mo)-Dissolved	<0.00010	DLA	0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Nickel (Ni)-Dissolved	0.0177		0.0010	mg/L	10-SEP-19	10-SEP-19	R4794788
Potassium (K)-Dissolved	2.71		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Selenium (Se)-Dissolved	14.2		0.10	ug/L	10-SEP-19	10-SEP-19	R4794788
Silicon (Si)-Dissolved	2.52		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-SEP-19	10-SEP-19	R4794788
Sodium (Na)-Dissolved	25.6		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Strontium (Sr)-Dissolved	0.905		0.00040	mg/L	10-SEP-19	10-SEP-19	R4794788
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	10-SEP-19	10-SEP-19	R4794788
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-SEP-19	10-SEP-19	R4794788
Uranium (U)-Dissolved	0.00548		0.000020	mg/L	10-SEP-19	10-SEP-19	R4794788
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	10-SEP-19	10-SEP-19	R4794788
Zinc (Zn)-Dissolved	0.0056		0.0020	mg/L	10-SEP-19	10-SEP-19	R4794788
<b>Hardness</b>							
Hardness (as CaCO3)	1560		0.50	mg/L		10-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	26.3		1.0	mg/L		08-SEP-19	R4789448
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	386		1.0	mg/L		08-SEP-19	R4789379
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-SEP-19	R4789379
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-SEP-19	R4789379

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2342849-1 CM_MW7-DP_WG_2019-09-05_N Sampled By: MC/SH/VS on 05-SEP-19 @ 12:00 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	386		1.0	mg/L		08-SEP-19	R4789379
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0062		0.0050	mg/L		10-SEP-19	R4797611
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		06-SEP-19	R4789491
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<2.5	DLHC	2.5	mg/L		06-SEP-19	R4789491
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2250		2.0	uS/cm		08-SEP-19	R4789379
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.10	DLHC	0.10	mg/L		06-SEP-19	R4789491
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		10-SEP-19	
Anion Sum	32.4			meq/L		10-SEP-19	
Cation Sum	32.4			meq/L		10-SEP-19	
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		10-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	2.95	DLHC	0.025	mg/L		06-SEP-19	R4789491
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.196	DLHC	0.0050	mg/L		06-SEP-19	R4789491
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		06-SEP-19	R4785668
<b>Oxidation reduction potential by elect.</b>							
ORP	501		-1000	mV		06-SEP-19	R4785653
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		09-SEP-19	R4789590
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1170	DLHC	1.5	mg/L		06-SEP-19	R4789491
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	2110	DLHC	20	mg/L		09-SEP-19	R4793289
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.4		1.0	mg/L		11-SEP-19	R4801248
<b>Turbidity</b>							
Turbidity	1.24		0.10	NTU		06-SEP-19	R4785610
<b>pH</b>							
pH	7.90		0.10	pH		08-SEP-19	R4789379
L2342849-2 CM_MW8_WG_2019-09-05_N Sampled By: MC/SH/VS on 05-SEP-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.54		0.50	mg/L		10-SEP-19	R4797308
Total Kjeldahl Nitrogen	0.952		0.050	mg/L		10-SEP-19	R4795109
Total Organic Carbon	0.67		0.50	mg/L		10-SEP-19	R4797308
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-SEP-19	10-SEP-19	R4794788
Dissolved Metals Filtration Location	FIELD					10-SEP-19	R4791633
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	10-SEP-19	11-SEP-19	R4795914
Dissolved Mercury Filtration Location	FIELD					10-SEP-19	R4793989
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2342849-2 CM_MW8_WG_2019-09-05_N							
Sampled By: MC/SH/VS on 05-SEP-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					10-SEP-19	R4791633
Aluminum (Al)-Dissolved	0.0141		0.0030	mg/L	10-SEP-19	10-SEP-19	R4794788
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Barium (Ba)-Dissolved	0.111		0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-SEP-19	10-SEP-19	R4794788
Boron (B)-Dissolved	0.307		0.010	mg/L	10-SEP-19	10-SEP-19	R4794788
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-SEP-19	10-SEP-19	R4794788
Calcium (Ca)-Dissolved	67.7		0.050	mg/L	10-SEP-19	10-SEP-19	R4794788
Chromium (Cr)-Dissolved	0.00019		0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Cobalt (Co)-Dissolved	0.48		0.10	ug/L	10-SEP-19	10-SEP-19	R4794788
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	10-SEP-19	10-SEP-19	R4794788
Iron (Fe)-Dissolved	0.012		0.010	mg/L	10-SEP-19	10-SEP-19	R4794788
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-SEP-19	10-SEP-19	R4794788
Lithium (Li)-Dissolved	0.0687		0.0010	mg/L	10-SEP-19	10-SEP-19	R4794788
Magnesium (Mg)-Dissolved	19.2		0.10	mg/L	10-SEP-19	10-SEP-19	R4794788
Manganese (Mn)-Dissolved	0.205		0.00010	mg/L	10-SEP-19	10-SEP-19	R4794788
Molybdenum (Mo)-Dissolved	0.000938		0.000050	mg/L	10-SEP-19	10-SEP-19	R4794788
Nickel (Ni)-Dissolved	0.00095		0.00050	mg/L	10-SEP-19	10-SEP-19	R4794788
Potassium (K)-Dissolved	2.81		0.050	mg/L	10-SEP-19	10-SEP-19	R4794788
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-SEP-19	10-SEP-19	R4794788
Silicon (Si)-Dissolved	6.44		0.050	mg/L	10-SEP-19	10-SEP-19	R4794788
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-SEP-19	10-SEP-19	R4794788
Sodium (Na)-Dissolved	51.2		0.050	mg/L	10-SEP-19	10-SEP-19	R4794788
Strontium (Sr)-Dissolved	4.85		0.00020	mg/L	10-SEP-19	10-SEP-19	R4794788
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-SEP-19	10-SEP-19	R4794788
Tin (Sn)-Dissolved	0.00040		0.0010	mg/L	10-SEP-19	10-SEP-19	R4794788
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	10-SEP-19	10-SEP-19	R4794788
Uranium (U)-Dissolved	0.000586		0.000010	mg/L	10-SEP-19	10-SEP-19	R4794788
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-SEP-19	10-SEP-19	R4794788
Zinc (Zn)-Dissolved	0.0108		0.0010	mg/L	10-SEP-19	10-SEP-19	R4794788
<b>Hardness</b>							
Hardness (as CaCO3)	248		0.50	mg/L		10-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	3.8		1.0	mg/L		08-SEP-19	R4789448
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	318		1.0	mg/L		08-SEP-19	R4789379
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		08-SEP-19	R4789379
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-SEP-19	R4789379
Alkalinity, Total (as CaCO3)	318		1.0	mg/L		08-SEP-19	R4789379
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.805	DLHC	0.050	mg/L		10-SEP-19	R4797611
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		06-SEP-19	R4789491
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.15		0.50	mg/L		06-SEP-19	R4789491
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	640		2.0	uS/cm		08-SEP-19	R4789379
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.297		0.020	mg/L		06-SEP-19	R4789491
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2342849-2 CM_MW8_WG_2019-09-05_N							
Sampled By: MC/SH/VS on 05-SEP-19 @ 12:00							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	97.1		-100	%		10-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-1.5			%		10-SEP-19	
Anion Sum	7.48			meq/L		10-SEP-19	
Cation Sum	7.26			meq/L		10-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0684		0.0050	mg/L		06-SEP-19	R4789491
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0030		0.0010	mg/L		06-SEP-19	R4789491
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		06-SEP-19	R4785668
<b>Oxidation redution potential by elect.</b>							
ORP	325		-1000	mV		06-SEP-19	R4785653
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0049		0.0020	mg/L		09-SEP-19	R4789590
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	50.2		0.30	mg/L		06-SEP-19	R4789491
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	375	DLHC	20	mg/L		09-SEP-19	R4793289
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.5		1.0	mg/L		11-SEP-19	R4801248
<b>Turbidity</b>							
Turbidity	6.88		0.10	NTU		06-SEP-19	R4785610
<b>pH</b>							
pH	8.17		0.10	pH		08-SEP-19	R4789379

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_09052019

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4789448							
<b>WG3155958-11</b>	<b>LCS</b>							
Acidity (as CaCO3)			102.6		%		85-115	08-SEP-19
<b>WG3155958-10</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	08-SEP-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4789379							
<b>WG3155938-9</b>	<b>DUP</b>	<b>L2342849-1</b>						
Alkalinity, Total (as CaCO3)		386	394		mg/L	2.0	20	08-SEP-19
<b>WG3155938-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.7		%		85-115	08-SEP-19
<b>WG3155938-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-SEP-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4794788							
<b>WG3156648-3</b>	<b>DUP</b>	<b>L2342849-2</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	10-SEP-19
<b>WG3156648-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.8		%		80-120	10-SEP-19
<b>WG3156648-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	10-SEP-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4789491							
<b>WG3156041-6</b>	<b>LCS</b>							
Bromide (Br)			100.5		%		85-115	06-SEP-19
<b>WG3156041-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-SEP-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4797308							
<b>WG3158432-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			107.1		%		80-120	10-SEP-19
<b>WG3158432-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	10-SEP-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4797308							
<b>WG3158432-2</b>	<b>LCS</b>							
Total Organic Carbon			115.8		%		80-120	10-SEP-19
<b>WG3158432-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4797308							
<b>WG3158432-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	10-SEP-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4789491							
<b>WG3156041-6 LCS</b>								
Chloride (Cl)			101.0		%		90-110	06-SEP-19
<b>WG3156041-5 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	06-SEP-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4789379							
<b>WG3155938-9 DUP</b>		<b>L2342849-1</b>						
Conductivity (@ 25C)		2250	2250		uS/cm	0.0	10	08-SEP-19
<b>WG3155938-8 LCS</b>								
Conductivity (@ 25C)			98.7		%		90-110	08-SEP-19
<b>WG3155938-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4789491							
<b>WG3156041-6 LCS</b>								
Fluoride (F)			103.0		%		90-110	06-SEP-19
<b>WG3156041-5 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	06-SEP-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4795914							
<b>WG3157152-2 LCS</b>								
Mercury (Hg)-Dissolved			99.2		%		80-120	11-SEP-19
<b>WG3157152-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	11-SEP-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4794788							
<b>WG3156648-3 DUP</b>		<b>L2342849-2</b>						
Aluminum (Al)-Dissolved		0.0141	0.0131		mg/L	7.8	20	10-SEP-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-SEP-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-SEP-19
Barium (Ba)-Dissolved		0.111	0.111		mg/L	0.6	20	10-SEP-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-SEP-19



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4794788</b>							
<b>WG3156648-3</b>	<b>DUP</b>	<b>L2342849-2</b>						
Boron (B)-Dissolved		0.307	0.323		mg/L	4.9	20	10-SEP-19
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-SEP-19
Calcium (Ca)-Dissolved		67.7	69.4		mg/L	2.4	20	10-SEP-19
Chromium (Cr)-Dissolved		0.00019	0.00019		mg/L	0.3	20	10-SEP-19
Cobalt (Co)-Dissolved		0.00048	0.00047		mg/L	3.6	20	10-SEP-19
Copper (Cu)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-SEP-19
Iron (Fe)-Dissolved		0.012	0.011		mg/L	2.3	20	10-SEP-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-SEP-19
Lithium (Li)-Dissolved		0.0687	0.0694		mg/L	1.0	20	10-SEP-19
Magnesium (Mg)-Dissolved		19.2	19.5		mg/L	1.4	20	10-SEP-19
Manganese (Mn)-Dissolved		0.205	0.207		mg/L	1.0	20	10-SEP-19
Molybdenum (Mo)-Dissolved		0.000938	0.000913		mg/L	2.7	20	10-SEP-19
Nickel (Ni)-Dissolved		0.00095	0.00096		mg/L	0.2	20	10-SEP-19
Potassium (K)-Dissolved		2.81	2.84		mg/L	1.2	20	10-SEP-19
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-SEP-19
Silicon (Si)-Dissolved		6.44	6.37		mg/L	1.1	20	10-SEP-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-SEP-19
Sodium (Na)-Dissolved		51.2	50.6		mg/L	1.0	20	10-SEP-19
Strontium (Sr)-Dissolved		4.85	5.03		mg/L	3.6	20	10-SEP-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-SEP-19
Tin (Sn)-Dissolved		0.00040	0.00041		mg/L	2.2	20	10-SEP-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-SEP-19
Uranium (U)-Dissolved		0.000586	0.000587		mg/L	0.1	20	10-SEP-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-SEP-19
Zinc (Zn)-Dissolved		0.0108	0.0102		mg/L	6.2	20	10-SEP-19
<b>WG3156648-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			115.1		%		80-120	10-SEP-19
Antimony (Sb)-Dissolved			106.7		%		80-120	10-SEP-19
Arsenic (As)-Dissolved			107.4		%		80-120	10-SEP-19
Barium (Ba)-Dissolved			110.5		%		80-120	10-SEP-19
Bismuth (Bi)-Dissolved			103.0		%		80-120	10-SEP-19
Boron (B)-Dissolved			99.9		%		80-120	10-SEP-19
Cadmium (Cd)-Dissolved			106.2		%		80-120	10-SEP-19
Calcium (Ca)-Dissolved			107.3		%		80-120	10-SEP-19



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4794788</b>							
<b>WG3156648-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			108.6		%		80-120	10-SEP-19
Cobalt (Co)-Dissolved			106.9		%		80-120	10-SEP-19
Copper (Cu)-Dissolved			106.4		%		80-120	10-SEP-19
Iron (Fe)-Dissolved			110.8		%		80-120	10-SEP-19
Lead (Pb)-Dissolved			105.4		%		80-120	10-SEP-19
Lithium (Li)-Dissolved			103.4		%		80-120	10-SEP-19
Magnesium (Mg)-Dissolved			112.0		%		80-120	10-SEP-19
Manganese (Mn)-Dissolved			109.7		%		80-120	10-SEP-19
Molybdenum (Mo)-Dissolved			106.1		%		80-120	10-SEP-19
Nickel (Ni)-Dissolved			106.8		%		80-120	10-SEP-19
Potassium (K)-Dissolved			112.9		%		80-120	10-SEP-19
Selenium (Se)-Dissolved			105.9		%		80-120	10-SEP-19
Silicon (Si)-Dissolved			116.7		%		60-140	10-SEP-19
Silver (Ag)-Dissolved			108.7		%		80-120	10-SEP-19
Sodium (Na)-Dissolved			117.6		%		80-120	10-SEP-19
Strontium (Sr)-Dissolved			108.5		%		80-120	10-SEP-19
Thallium (Tl)-Dissolved			105.6		%		80-120	10-SEP-19
Tin (Sn)-Dissolved			104.3		%		80-120	10-SEP-19
Titanium (Ti)-Dissolved			113.6		%		80-120	10-SEP-19
Uranium (U)-Dissolved			109.8		%		80-120	10-SEP-19
Vanadium (V)-Dissolved			110.1		%		80-120	10-SEP-19
Zinc (Zn)-Dissolved			107.6		%		80-120	10-SEP-19
<b>WG3156648-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	10-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	10-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	10-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	10-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-19



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4794788</b>							
<b>WG3156648-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	10-SEP-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	10-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	10-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	10-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	10-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	10-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	10-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	10-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	10-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	10-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	10-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4797611</b>							
<b>WG3157258-10</b>	<b>LCS</b>							
Ammonia as N			109.2		%		85-115	10-SEP-19
<b>WG3157258-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	10-SEP-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4789491</b>							
<b>WG3156041-6</b>	<b>LCS</b>							
Nitrite (as N)			102.4		%		90-110	06-SEP-19
<b>WG3156041-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	06-SEP-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4789491							
<b>WG3156041-6</b>	<b>LCS</b>							
Nitrate (as N)			101.4		%		90-110	06-SEP-19
<b>WG3156041-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-SEP-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4785653							
<b>WG3154603-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			226		mV		210-230	06-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4789590							
<b>WG3155875-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			114.6		%		80-120	09-SEP-19
<b>WG3155875-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	09-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4789379							
<b>WG3155938-9</b>	<b>DUP</b>	<b>L2342849-1</b>						
pH		7.90	7.91	J	pH	0.01	0.2	08-SEP-19
<b>WG3155938-8</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	08-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4785668							
<b>WG3154558-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.2		%		80-120	06-SEP-19
<b>WG3154558-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	06-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4789491							
<b>WG3156041-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	06-SEP-19
<b>WG3156041-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	06-SEP-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4793289							
<b>WG3155681-2</b>	<b>LCS</b>							
Total Dissolved Solids			97.2		%		85-115	09-SEP-19
<b>WG3155681-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	09-SEP-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4795109							
<b>WG3157524-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.3		%		75-125	10-SEP-19
<b>WG3157524-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.5		%		75-125	10-SEP-19
<b>WG3157524-18</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.0		%		75-125	11-SEP-19
<b>WG3157524-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			105.8		%		75-125	10-SEP-19
<b>WG3157524-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			104.9		%		75-125	10-SEP-19
<b>WG3157524-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-19
<b>WG3157524-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-19
<b>WG3157524-17</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	11-SEP-19
<b>WG3157524-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-19
<b>WG3157524-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	10-SEP-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4801248							
<b>WG3158841-4</b>	<b>LCS</b>							
Total Suspended Solids			97.7		%		85-115	11-SEP-19
<b>WG3158841-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	11-SEP-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4785610							
<b>WG3154591-8</b>	<b>LCS</b>							
Turbidity			94.0		%		85-115	06-SEP-19
<b>WG3154591-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	06-SEP-19



# Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2342849

Report Date: 13-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	05-SEP-19 12:00	06-SEP-19 15:30	0.25	28	hours	EHTR-FM
	2	05-SEP-19 12:00	06-SEP-19 15:30	0.25	28	hours	EHTR-FM
pH	1	05-SEP-19 12:00	08-SEP-19 09:00	0.25	69	hours	EHTR-FM
	2	05-SEP-19 12:00	08-SEP-19 09:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2342849 were received on 06-SEP-19 09:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC\_WG\_Q3\_09052019**

TURNAROUND TIME: Regular

RUSH: No

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Scott.Holmgren@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:	kate.middleton@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	don.sacino@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered - F: Field, L: Lab, FL: Field & Lab, N: None



L2342849-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED					F	N	F	F	N	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA						F
CM_MW7-DP_WG_2019-09-05_N	CM_MW7-DP	WG	No	2019/09/05		G	5	1	1	1	1	1						
CM_MW8_WG_2019-09-05_N	CM_MW8	WG	No	2019/09/05		G	5	1	1	1	1	1						

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**SERVICE REQUEST (rush - subject to availability)**

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

MC/SH/S

Mobile #

250 425 7518

Sampler's Signature

Date/Time

2019/09/05 - 17:00

901



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 10-SEP-19  
Report Date: 17-SEP-19 15:59 (MT)  
Version: FINAL

Client Phone: 250-425-7321

## Certificate of Analysis

Lab Work Order #: L2344570  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q3\_09092019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2344570-1 CM_MW7-SH_WG_2019-09-09_N							
Sampled By: MC/SH on 09-SEP-19 @ 15:15							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.37		0.50	mg/L		13-SEP-19	R4807370
Total Kjeldahl Nitrogen	0.170		0.050	mg/L		13-SEP-19	R4801170
Total Organic Carbon	3.17		0.50	mg/L		13-SEP-19	R4807370
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	13-SEP-19	13-SEP-19	R4806483
Dissolved Metals Filtration Location	FIELD					13-SEP-19	R4803994
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	16-SEP-19	16-SEP-19	R4811610
Dissolved Mercury Filtration Location	FIELD					16-SEP-19	R4809669
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					13-SEP-19	R4803994
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	13-SEP-19	13-SEP-19	R4806483
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Arsenic (As)-Dissolved	0.00054		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Barium (Ba)-Dissolved	0.0311		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	13-SEP-19	13-SEP-19	R4806483
Boron (B)-Dissolved	0.024		0.010	mg/L	13-SEP-19	13-SEP-19	R4806483
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	13-SEP-19	13-SEP-19	R4806483
Calcium (Ca)-Dissolved	158		0.050	mg/L	13-SEP-19	13-SEP-19	R4806483
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Cobalt (Co)-Dissolved	0.61		0.10	ug/L	13-SEP-19	13-SEP-19	R4806483
Copper (Cu)-Dissolved	<0.00050		0.00050	mg/L	13-SEP-19	13-SEP-19	R4806483
Iron (Fe)-Dissolved	0.644		0.010	mg/L	13-SEP-19	13-SEP-19	R4806483
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	13-SEP-19	13-SEP-19	R4806483
Lithium (Li)-Dissolved	0.0072		0.0010	mg/L	13-SEP-19	13-SEP-19	R4806483
Magnesium (Mg)-Dissolved	55.6		0.10	mg/L	13-SEP-19	13-SEP-19	R4806483
Manganese (Mn)-Dissolved	0.196		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Molybdenum (Mo)-Dissolved	0.00103		0.000050	mg/L	13-SEP-19	13-SEP-19	R4806483
Nickel (Ni)-Dissolved	0.00127		0.00050	mg/L	13-SEP-19	13-SEP-19	R4806483
Potassium (K)-Dissolved	1.79		0.050	mg/L	13-SEP-19	13-SEP-19	R4806483
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	13-SEP-19	13-SEP-19	R4806483
Silicon (Si)-Dissolved	5.48		0.050	mg/L	13-SEP-19	13-SEP-19	R4806483
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	13-SEP-19	13-SEP-19	R4806483
Sodium (Na)-Dissolved	16.1		0.050	mg/L	13-SEP-19	13-SEP-19	R4806483
Strontium (Sr)-Dissolved	0.512		0.00020	mg/L	13-SEP-19	13-SEP-19	R4806483
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	13-SEP-19	13-SEP-19	R4806483
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	13-SEP-19	13-SEP-19	R4806483
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	13-SEP-19	13-SEP-19	R4806483
Uranium (U)-Dissolved	0.000863		0.000010	mg/L	13-SEP-19	13-SEP-19	R4806483
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	13-SEP-19	13-SEP-19	R4806483
Zinc (Zn)-Dissolved	0.0031		0.0010	mg/L	13-SEP-19	13-SEP-19	R4806483
<b>Hardness</b>							
Hardness (as CaCO3)	623		0.50	mg/L		13-SEP-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12.5		1.0	mg/L		11-SEP-19	R4801069
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	291		1.0	mg/L		11-SEP-19	R4800936
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		11-SEP-19	R4800936
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		11-SEP-19	R4800936

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2344570-1 CM_MW7-SH_WG_2019-09-09_N							
Sampled By: MC/SH on 09-SEP-19 @ 15:15							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	291		1.0	mg/L		11-SEP-19	R4800936
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0787		0.0050	mg/L		12-SEP-19	R4806992
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		10-SEP-19	R4796951
<b>Chloride in Water by IC</b>							
Chloride (Cl)	12.1	DLHC	2.5	mg/L		10-SEP-19	R4796951
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	975		2.0	uS/cm		11-SEP-19	R4800936
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.23	DLHC	0.10	mg/L		10-SEP-19	R4796951
<b>Ion Balance Calculation</b>							
Ion Balance	113		-100	%		13-SEP-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	6.3			%		13-SEP-19	
Anion Sum	11.7			meq/L		13-SEP-19	
Cation Sum	13.2			meq/L		13-SEP-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		10-SEP-19	R4796951
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		10-SEP-19	R4796951
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		10-SEP-19	R4795230
<b>Oxidation reduction potential by elect.</b>							
ORP	336		-1000	mV		11-SEP-19	R4800709
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0074		0.0020	mg/L		11-SEP-19	R4798570
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	264	DLHC	1.5	mg/L		10-SEP-19	R4796951
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	691		20	mg/L		11-SEP-19	R4801730
<b>Total Suspended Solids</b>							
Total Suspended Solids	40.5		1.0	mg/L		13-SEP-19	R4807649
<b>Turbidity</b>							
Turbidity	23.8		0.10	NTU		11-SEP-19	R4800912
<b>pH</b>							
pH	8.14		0.10	pH		11-SEP-19	R4800936

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer



## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q3\_09092019

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 1 of 9

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>		<b>Water</b>						
Batch	R4801069							
<b>WG3159412-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.3		%		85-115	11-SEP-19
<b>WG3159412-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	11-SEP-19
<b>ALK-MAN-CL</b>		<b>Water</b>						
Batch	R4800936							
<b>WG3159420-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.7		%		85-115	11-SEP-19
<b>WG3159420-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-SEP-19
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>						
Batch	R4806483							
<b>WG3160457-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.1		%		80-120	13-SEP-19
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-SEP-19
<b>BR-L-IC-N-CL</b>		<b>Water</b>						
Batch	R4796951							
<b>WG3158350-10</b>	<b>LCS</b>							
Bromide (Br)			100.2		%		85-115	10-SEP-19
<b>WG3158350-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	10-SEP-19
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4807370							
<b>WG3161821-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			107.7		%		80-120	13-SEP-19
<b>WG3161821-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	13-SEP-19
<b>C-TOT-ORG-LOW-CL</b>		<b>Water</b>						
Batch	R4807370							
<b>WG3161821-10</b>	<b>LCS</b>							
Total Organic Carbon			107.8		%		80-120	13-SEP-19
<b>WG3161821-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	13-SEP-19
<b>CL-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-10</b>	<b>LCS</b>							
Chloride (Cl)			98.7		%		90-110	10-SEP-19
<b>WG3158350-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	10-SEP-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4800936							
<b>WG3159420-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			98.2		%		90-110	11-SEP-19
<b>WG3159420-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	11-SEP-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4796951							
<b>WG3158350-10</b>	<b>LCS</b>							
Fluoride (F)			100.7		%		90-110	10-SEP-19
<b>WG3158350-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	10-SEP-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4811610							
<b>WG3162712-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			114.1		%		80-120	16-SEP-19
<b>WG3162712-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	16-SEP-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4806483							
<b>WG3160457-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.3		%		80-120	13-SEP-19
Antimony (Sb)-Dissolved			100.1		%		80-120	13-SEP-19
Arsenic (As)-Dissolved			95.2		%		80-120	13-SEP-19
Barium (Ba)-Dissolved			96.2		%		80-120	13-SEP-19
Bismuth (Bi)-Dissolved			94.6		%		80-120	13-SEP-19
Boron (B)-Dissolved			97.1		%		80-120	13-SEP-19
Cadmium (Cd)-Dissolved			98.4		%		80-120	13-SEP-19
Calcium (Ca)-Dissolved			97.7		%		80-120	13-SEP-19
Chromium (Cr)-Dissolved			96.3		%		80-120	13-SEP-19
Cobalt (Co)-Dissolved			96.9		%		80-120	13-SEP-19
Copper (Cu)-Dissolved			96.4		%		80-120	13-SEP-19



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 3 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4806483</b>							
<b>WG3160457-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			94.5		%		80-120	13-SEP-19
Lead (Pb)-Dissolved			95.5		%		80-120	13-SEP-19
Lithium (Li)-Dissolved			99.6		%		80-120	13-SEP-19
Magnesium (Mg)-Dissolved			99.9		%		80-120	13-SEP-19
Manganese (Mn)-Dissolved			101.4		%		80-120	13-SEP-19
Molybdenum (Mo)-Dissolved			96.6		%		80-120	13-SEP-19
Nickel (Ni)-Dissolved			95.8		%		80-120	13-SEP-19
Potassium (K)-Dissolved			95.4		%		80-120	13-SEP-19
Selenium (Se)-Dissolved			94.5		%		80-120	13-SEP-19
Silicon (Si)-Dissolved			101.1		%		60-140	13-SEP-19
Silver (Ag)-Dissolved			93.6		%		80-120	13-SEP-19
Sodium (Na)-Dissolved			104.2		%		80-120	13-SEP-19
Strontium (Sr)-Dissolved			100.5		%		80-120	13-SEP-19
Thallium (Tl)-Dissolved			98.4		%		80-120	13-SEP-19
Tin (Sn)-Dissolved			95.5		%		80-120	13-SEP-19
Titanium (Ti)-Dissolved			95.6		%		80-120	13-SEP-19
Uranium (U)-Dissolved			96.0		%		80-120	13-SEP-19
Vanadium (V)-Dissolved			100.1		%		80-120	13-SEP-19
Zinc (Zn)-Dissolved			93.9		%		80-120	13-SEP-19
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-SEP-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-SEP-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-SEP-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-SEP-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 4 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4806483</b>							
<b>WG3160457-1</b>	<b>MB</b>	<b>NP</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-SEP-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-SEP-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-SEP-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-SEP-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-SEP-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-SEP-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-SEP-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-SEP-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-SEP-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-SEP-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4806992</b>							
<b>WG3160252-10</b>	<b>LCS</b>							
Ammonia as N			102.2		%		85-115	12-SEP-19
<b>WG3160252-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	12-SEP-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4796951</b>							
<b>WG3158350-10</b>	<b>LCS</b>							
Nitrite (as N)			100.6		%		90-110	10-SEP-19
<b>WG3158350-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	10-SEP-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4796951</b>							
<b>WG3158350-10</b>	<b>LCS</b>							
Nitrate (as N)			98.9		%		90-110	10-SEP-19
<b>WG3158350-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	10-SEP-19
<b>ORP-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ORP-CL</b>	<b>Water</b>							
Batch R4800709								
WG3159014-1 CRM		CL-ORP						
ORP			226		mV		210-230	11-SEP-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R4798570								
WG3158662-18 LCS								
Phosphorus (P)-Total			102.5		%		80-120	11-SEP-19
WG3158662-17 MB								
Phosphorus (P)-Total			<0.0020		mg/L		0.002	11-SEP-19
<b>PH-CL</b>	<b>Water</b>							
Batch R4800936								
WG3159420-14 LCS								
pH			7.03		pH		6.9-7.1	11-SEP-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R4795230								
WG3157448-18 LCS								
Orthophosphate-Dissolved (as P)			97.9		%		80-120	10-SEP-19
WG3157448-5 MB								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	10-SEP-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch R4796951								
WG3158350-10 LCS								
Sulfate (SO4)			98.7		%		90-110	10-SEP-19
WG3158350-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	10-SEP-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch R4801730								
WG3158128-12 DUP		L2344570-1						
Total Dissolved Solids		691	675		mg/L	2.4	20	11-SEP-19
WG3158128-11 LCS								
Total Dissolved Solids			97.1		%		85-115	11-SEP-19
WG3158128-10 MB								
Total Dissolved Solids			<10		mg/L		10	11-SEP-19
<b>TKN-L-F-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4801170</b>							
<b>WG3159658-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.4		%		75-125	12-SEP-19
<b>WG3159658-11</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			106.4		%		75-125	12-SEP-19
<b>WG3159658-12</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	12-SEP-19
<b>WG3159658-13</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			103.1		%		75-125	13-SEP-19
<b>WG3159658-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			100.9		%		75-125	13-SEP-19
<b>WG3159658-16</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.1		%		75-125	13-SEP-19
<b>WG3159658-8</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			99.5		%		75-125	12-SEP-19
<b>WG3159658-9</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			101.6		%		75-125	12-SEP-19
<b>WG3159658-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-15</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
<b>WG3159658-2</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-3</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-4</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	12-SEP-19
<b>WG3159658-6</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
<b>WG3159658-7</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	13-SEP-19
<b>TSS-L-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4807649</b>							
<b>WG3160658-6</b>	<b>LCS</b>							
Total Suspended Solids			97.4		%		85-115	13-SEP-19
<b>WG3160658-5</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	13-SEP-19



## Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4800912</b>							
<b>WG3159006-3</b>	<b>DUP</b>	<b>L2344570-1</b>						
Turbidity		23.8	23.7		NTU	0.4	15	11-SEP-19
<b>WG3159006-2</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	11-SEP-19
<b>WG3159006-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	11-SEP-19



# Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 8 of 9

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2344570

Report Date: 17-SEP-19

Page 9 of 9

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	09-SEP-19 15:15	11-SEP-19 12:10	0.25	45	hours	EHTR-FM
pH	1	09-SEP-19 15:15	11-SEP-19 09:00	0.25	42	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).



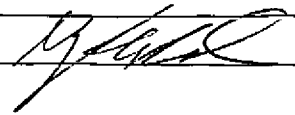
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2344570 were received on 10-SEP-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b>		<b>COC_WG_Q3_09092019</b>		<b>TURNAROUND TIME:</b> Regular			<b>RUSH:</b> No																																
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>																																
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary			Report Format / Distribution																																
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets			Email 1: Scott.Holmgren@teck.com X X X																																
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com			Email 2: teckcoal@equisonline.com X X X																																
Address PO Box 3000				Address 2559 29th St. NE			Email 3: Jay.Jones@teck.com X X X																																
City Sparwood Province BC				City Calgary Province AB			Email 4: Kate.Middleton@teck.com X X X																																
Postal Code V0B 2G0 Country Canada				Postal Code T1Y 7B5 Country Canada			Email 5: don.sachno@teck.com X X X																																
Phone Number 1-250-425-7321				Phone Number 403 407 1800			PO number 611069																																
<b>SAMPLE DETAILS</b>					<b>ANALYSIS REQUESTED</b>																																		
 <p>L2344570-COFC</p>					<table border="1"> <thead> <tr> <th>P</th> <th>N</th> <th>F</th> <th>F</th> <th>N</th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>H2SO4</td> <td>H2SO4</td> <td>HCl</td> <td>HNO3</td> <td>NONE</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>ALS_Package-DOC</td> <td>ALS_Package-TKN/TOC</td> <td>HG-D-CVAF-VA</td> <td>TECKCOAL-MET-D-VA</td> <td>TECKCOAL-ROUTINE-VA</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					P	N	F	F	N						H2SO4	H2SO4	HCl	HNO3	NONE						ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
P	N	F	F	N																																			
H2SO4	H2SO4	HCl	HNO3	NONE																																			
ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA																																			
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.																																
CM_MW7-SH_WG_2019-09-09_N	CM_MW7-SH	WG	No	2019/09/09		G	5																																
<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>			<b>RELINQUISHED BY/AFFILIATION</b>			<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>																															
								 9/10/2019																															
<b>SERVICE REQUEST (rush subject to availability)</b>																																							
Regular (default) <input checked="" type="checkbox"/>			Sampler's Name		MC/SH		Mobile #		250 425 7518																														
Priority (2-3 business days) - 50% surcharge			Sampler's Signature				Date/Time		2019/09/09 - 17:00																														
Emergency (1 Business Day) - 100% surcharge																																							
For Emergency <1 Day, ASAP or Weekend - Contact ALS																																							

S



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 01-NOV-19  
Report Date: 08-NOV-19 14:56 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2375651  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191031  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-1 CM_MW3-DP_WG_2019-10-14_N							
Sampled By: VS/SH/MC on 31-OCT-19 @ 11:47							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898869
Total Kjeldahl Nitrogen	0.639		0.050	mg/L		02-NOV-19	R4896222
Total Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898869
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-19	03-NOV-19	R4897877
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-19	05-NOV-19	R4898478
Dissolved Mercury Filtration Location	FIELD					04-NOV-19	R4896948
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
Aluminum (Al)-Dissolved	0.0056		0.0030	mg/L	02-NOV-19	03-NOV-19	R4897877
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Arsenic (As)-Dissolved	0.00068		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Barium (Ba)-Dissolved	0.837		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Boron (B)-Dissolved	0.485		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-19	03-NOV-19	R4897877
Calcium (Ca)-Dissolved	12.1		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-19	03-NOV-19	R4897877
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Iron (Fe)-Dissolved	0.034		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Lithium (Li)-Dissolved	1.27		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Magnesium (Mg)-Dissolved	4.50		0.10	mg/L	02-NOV-19	03-NOV-19	R4897877
Manganese (Mn)-Dissolved	0.0363		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Molybdenum (Mo)-Dissolved	0.00211		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Nickel (Ni)-Dissolved	0.00255		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Potassium (K)-Dissolved	2.26		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-NOV-19	03-NOV-19	R4897877
Silicon (Si)-Dissolved	3.04		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Sodium (Na)-Dissolved	548		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Strontium (Sr)-Dissolved	1.11		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Uranium (U)-Dissolved	0.000358		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
<b>Hardness</b>							
Hardness (as CaCO3)	48.6		0.50	mg/L		04-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4895745
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	197		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Carbonate (as CaCO3)	5.8		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-1 CM_MW3-DP_WG_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 11:47 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		01-NOV-19	R4897006
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.659	DLHC	0.050	mg/L		06-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	2.72	DLHC	0.25	mg/L		01-NOV-19	R4896242
<b>Chloride in Water by IC</b>							
Chloride (Cl)	801	DLHC	2.5	mg/L		01-NOV-19	R4896242
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2550		2.0	uS/cm		01-NOV-19	R4897006
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.69	DLHC	0.10	mg/L		01-NOV-19	R4896242
<b>Ion Balance Calculation</b>							
Ion Balance	93.1		-100	%		04-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-3.6			%		04-NOV-19	
Anion Sum	26.7			meq/L		04-NOV-19	
Cation Sum	24.9			meq/L		04-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.046	DLHC	0.025	mg/L		01-NOV-19	R4896242
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		01-NOV-19	R4896242
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0061		0.0010	mg/L		01-NOV-19	R4895904
<b>Oxidation reduction potential by elect.</b>							
ORP	180		-1000	mV		01-NOV-19	R4896000
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0085		0.0020	mg/L		04-NOV-19	R4897866
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1.9	DLHC	1.5	mg/L		01-NOV-19	R4896242
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1480	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		04-NOV-19	R4898758
<b>Turbidity</b>							
Turbidity	0.43		0.10	NTU		01-NOV-19	R4896011
<b>pH</b>							
pH	8.37		0.10	pH		01-NOV-19	R4897006
L2375651-2 CM_MW3-SH_WG_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 13:43 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.72		0.50	mg/L		04-NOV-19	R4898869
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-NOV-19	R4896222
Total Organic Carbon	0.77		0.50	mg/L		04-NOV-19	R4898869
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-19	03-NOV-19	R4897877
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-19	05-NOV-19	R4898478
Dissolved Mercury Filtration Location	FIELD					04-NOV-19	R4896948
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-2 CM_MW3-SH_WG_2019-10-14_N							
Sampled By: VS/SH/MC on 31-OCT-19 @ 13:43							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-19	03-NOV-19	R4897877
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Arsenic (As)-Dissolved	0.00011		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Barium (Ba)-Dissolved	0.0912		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Boron (B)-Dissolved	0.025		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cadmium (Cd)-Dissolved	0.0124		0.0050	ug/L	02-NOV-19	03-NOV-19	R4897877
Calcium (Ca)-Dissolved	54.9		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Chromium (Cr)-Dissolved	0.00026		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-19	03-NOV-19	R4897877
Copper (Cu)-Dissolved	0.00115		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Lithium (Li)-Dissolved	0.0087		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Magnesium (Mg)-Dissolved	11.5		0.10	mg/L	02-NOV-19	03-NOV-19	R4897877
Manganese (Mn)-Dissolved	0.00465		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Molybdenum (Mo)-Dissolved	0.000689		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Potassium (K)-Dissolved	0.684		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Selenium (Se)-Dissolved	0.266		0.050	ug/L	02-NOV-19	03-NOV-19	R4897877
Silicon (Si)-Dissolved	2.39		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Sodium (Na)-Dissolved	4.03		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Strontium (Sr)-Dissolved	0.274		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Tin (Sn)-Dissolved	0.00015		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Uranium (U)-Dissolved	0.000207		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Zinc (Zn)-Dissolved	0.0053		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
<b>Hardness</b>							
Hardness (as CaCO3)	185		0.50	mg/L		08-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.8		1.0	mg/L		01-NOV-19	R4895745
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	180		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Total (as CaCO3)	180		1.0	mg/L		01-NOV-19	R4897006
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		06-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-NOV-19	R4896242
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.36		0.50	mg/L		01-NOV-19	R4896242
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	331		2.0	uS/cm		01-NOV-19	R4897006
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.109		0.020	mg/L		01-NOV-19	R4896242
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-2 CM_MW3-SH_WG_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 13:43 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	3.8			%		08-NOV-19	
Anion Sum	4.01			meq/L		08-NOV-19	
Cation Sum	4.33			meq/L		08-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	108		-100	%		08-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0148		0.0050	mg/L		01-NOV-19	R4896242
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-NOV-19	R4896242
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0031		0.0010	mg/L		01-NOV-19	R4895904
<b>Oxidation redution potential by elect.</b>							
ORP	399		-1000	mV		01-NOV-19	R4896000
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0058		0.0020	mg/L		04-NOV-19	R4897866
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	17.7		0.30	mg/L		01-NOV-19	R4896242
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	208	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.8		1.0	mg/L		04-NOV-19	R4898758
<b>Turbidity</b>							
Turbidity	3.68		0.10	NTU		01-NOV-19	R4896011
<b>pH</b>							
pH	8.19		0.10	pH		01-NOV-19	R4897006
L2375651-3 CM_MW2-SH_WG_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 15:05 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.09		0.50	mg/L		04-NOV-19	R4898869
Total Kjeldahl Nitrogen	0.103		0.050	mg/L		02-NOV-19	R4896222
Total Organic Carbon	1.09		0.50	mg/L		04-NOV-19	R4898869
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-19	03-NOV-19	R4897877
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-19	05-NOV-19	R4898478
Dissolved Mercury Filtration Location	FIELD					04-NOV-19	R4896948
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-19	03-NOV-19	R4897877
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Barium (Ba)-Dissolved	0.103		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Boron (B)-Dissolved	0.054		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cadmium (Cd)-Dissolved	0.123		0.0050	ug/L	02-NOV-19	03-NOV-19	R4897877
Calcium (Ca)-Dissolved	182		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Chromium (Cr)-Dissolved	0.00014		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-19	03-NOV-19	R4897877

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-3 CM_MW2-SH_WG_2019-10-14_N							
Sampled By: VS/SH/MC on 31-OCT-19 @ 15:05							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	0.00059		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Lead (Pb)-Dissolved	0.000078		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Lithium (Li)-Dissolved	0.0339		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Magnesium (Mg)-Dissolved	45.8		0.10	mg/L	02-NOV-19	03-NOV-19	R4897877
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Molybdenum (Mo)-Dissolved	0.000118		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Nickel (Ni)-Dissolved	0.00057		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Potassium (K)-Dissolved	1.50		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Selenium (Se)-Dissolved	0.473		0.050	ug/L	02-NOV-19	03-NOV-19	R4897877
Silicon (Si)-Dissolved	4.80		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Sodium (Na)-Dissolved	39.7		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Strontium (Sr)-Dissolved	0.509		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Tin (Sn)-Dissolved	0.00023		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Uranium (U)-Dissolved	0.000193		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Zinc (Zn)-Dissolved	0.0022		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
<b>Hardness</b>							
Hardness (as CaCO3)	644		0.50	mg/L		08-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12.5		1.0	mg/L		01-NOV-19	R4895745
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	394		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Total (as CaCO3)	394		1.0	mg/L		01-NOV-19	R4897006
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		05-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		01-NOV-19	R4896242
<b>Chloride in Water by IC</b>							
Chloride (Cl)	7.0	DLHC	2.5	mg/L		01-NOV-19	R4896242
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1100		2.0	uS/cm		01-NOV-19	R4897006
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.10	DLHC	0.10	mg/L		01-NOV-19	R4896242
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	4.6			%		08-NOV-19	
Anion Sum	15.3			meq/L		08-NOV-19	
Cation Sum	16.8			meq/L		08-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	110		-100	%		08-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.478	DLHC	0.025	mg/L		01-NOV-19	R4896242
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		01-NOV-19	R4896242
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0023		0.0010	mg/L		01-NOV-19	R4895904

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-3 CM_MW2-SH_WG_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 15:05 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	429		-1000	mV		01-NOV-19	R4896000
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-NOV-19	R4897866
<b>Sulfate in Water by IC</b> Sulfate (SO4)	347	DLHC	1.5	mg/L		01-NOV-19	R4896242
<b>Total Dissolved Solids</b> Total Dissolved Solids	844	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		04-NOV-19	R4898758
<b>Turbidity</b> Turbidity	0.11		0.10	NTU		01-NOV-19	R4896011
<b>pH</b> pH	8.00		0.10	pH		01-NOV-19	R4897006
L2375651-4 CM_NNP_WS_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.64		0.50	mg/L		04-NOV-19	R4898869
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-NOV-19	R4896222
Total Organic Carbon	0.67		0.50	mg/L		04-NOV-19	R4898869
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-19	03-NOV-19	R4897877
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-NOV-19	05-NOV-19	R4898478
Dissolved Mercury Filtration Location	FIELD					04-NOV-19	R4896948
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-19	03-NOV-19	R4897877
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Arsenic (As)-Dissolved	0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Barium (Ba)-Dissolved	0.0874		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Boron (B)-Dissolved	0.024		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cadmium (Cd)-Dissolved	0.0079		0.0050	ug/L	02-NOV-19	03-NOV-19	R4897877
Calcium (Ca)-Dissolved	56.9		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Chromium (Cr)-Dissolved	0.00025		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-19	03-NOV-19	R4897877
Copper (Cu)-Dissolved	0.00115		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Lithium (Li)-Dissolved	0.0082		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Magnesium (Mg)-Dissolved	11.7		0.10	mg/L	02-NOV-19	03-NOV-19	R4897877
Manganese (Mn)-Dissolved	0.00471		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Molybdenum (Mo)-Dissolved	0.000728		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Potassium (K)-Dissolved	0.690		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Selenium (Se)-Dissolved	0.217		0.050	ug/L	02-NOV-19	03-NOV-19	R4897877
Silicon (Si)-Dissolved	2.38		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-4 CM_NNP_WS_2019-10-14_N							
Sampled By: VS/SH/MC on 31-OCT-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	3.96		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Strontium (Sr)-Dissolved	0.282		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Uranium (U)-Dissolved	0.000199		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Zinc (Zn)-Dissolved	0.0050		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
<b>Hardness</b>							
Hardness (as CaCO3)	190		0.50	mg/L		08-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.1		1.0	mg/L		01-NOV-19	R4895745
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	176		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Total (as CaCO3)	176		1.0	mg/L		01-NOV-19	R4897006
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0052		0.0050	mg/L		05-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-NOV-19	R4896242
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.19		0.50	mg/L		01-NOV-19	R4896242
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	320		2.0	uS/cm		01-NOV-19	R4897006
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.121		0.020	mg/L		01-NOV-19	R4896242
<b>Ion Balance Calculation</b>							
Ion Balance	111		-100	%		08-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	5.3			%		08-NOV-19	
Anion Sum	3.92			meq/L		08-NOV-19	
Cation Sum	4.36			meq/L		08-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0123		0.0050	mg/L		01-NOV-19	R4896242
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-NOV-19	R4896242
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0036		0.0010	mg/L		01-NOV-19	R4895904
<b>Oxidation redution potential by elect.</b>							
ORP	299		-1000	mV		01-NOV-19	R4896000
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0063		0.0020	mg/L		04-NOV-19	R4897866
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	17.7		0.30	mg/L		01-NOV-19	R4896242
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	205	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.2		1.0	mg/L		04-NOV-19	R4898758
<b>Turbidity</b>							
Turbidity	3.33		0.10	NTU		01-NOV-19	R4896011

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-4 CM_NNP_WS_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 12:00 Matrix: WG <b>pH</b> pH	8.21		0.10	pH		01-NOV-19	R4897006
L2375651-5 CM_NNT_WS_2019-10-14_N Sampled By: VS/SH/MC on 31-OCT-19 @ 12:00 Matrix: WG <b>Miscellaneous Parameters</b> Dissolved Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898869
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		02-NOV-19	R4896222
Total Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898869
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	02-NOV-19	03-NOV-19	R4897877
Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	04-NOV-19	05-NOV-19	R4898478
Dissolved Mercury Filtration Location	FIELD					04-NOV-19	R4896948
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					02-NOV-19	R4896366
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	02-NOV-19	03-NOV-19	R4897877
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Boron (B)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	02-NOV-19	03-NOV-19	R4897877
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	02-NOV-19	03-NOV-19	R4897877
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	02-NOV-19	03-NOV-19	R4897877
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	02-NOV-19	03-NOV-19	R4897877
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Potassium (K)-Dissolved	<0.050		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	02-NOV-19	03-NOV-19	R4897877
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	02-NOV-19	03-NOV-19	R4897877
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	02-NOV-19	03-NOV-19	R4897877
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	02-NOV-19	03-NOV-19	R4897877
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	02-NOV-19	03-NOV-19	R4897877
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	02-NOV-19	03-NOV-19	R4897877
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	02-NOV-19	03-NOV-19	R4897877
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	02-NOV-19	03-NOV-19	R4897877
<b>Hardness</b> Hardness (as CaCO3)	<0.50		0.50	mg/L		08-NOV-19	
<b>Routine for Teck Coal</b> <b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375651-5 CM_NNT_WS_2019-10-14_N							
Sampled By: VS/SH/MC on 31-OCT-19 @ 12:00							
Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO <sub>3</sub> )	1.5		1.0	mg/L		01-NOV-19	R4895745
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		01-NOV-19	R4897006
Alkalinity, Total (as CaCO <sub>3</sub> )	<1.0		1.0	mg/L		01-NOV-19	R4897006
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		05-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		01-NOV-19	R4896242
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		01-NOV-19	R4896242
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		01-NOV-19	R4897006
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		01-NOV-19	R4896242
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		08-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		08-NOV-19	
Anion Sum	<0.10			meq/L		08-NOV-19	
Cation Sum	<0.10			meq/L		08-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		01-NOV-19	R4896242
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		01-NOV-19	R4896242
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		01-NOV-19	R4895904
<b>Oxidation redution potential by elect.</b>							
ORP	284		-1000	mV		01-NOV-19	R4896000
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		04-NOV-19	R4897866
<b>Sulfate in Water by IC</b>							
Sulfate (SO <sub>4</sub> )	<0.30		0.30	mg/L		01-NOV-19	R4896242
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	<10		10	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		04-NOV-19	R4898758
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		01-NOV-19	R4896011
<b>pH</b>							
pH	5.37		0.10	pH		01-NOV-19	R4897006

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
<p>This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.</p>			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q4\_20191031

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 1 of 10

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4895745							
<b>WG3208457-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	01-NOV-19
<b>WG3208457-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	01-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4897006							
<b>WG3209642-18</b>	<b>DUP</b>	<b>L2375651-1</b>						
Alkalinity, Total (as CaCO3)		203	211		mg/L	4.0	20	01-NOV-19
<b>WG3209642-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			98.4		%		85-115	01-NOV-19
<b>WG3209642-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4897877							
<b>WG3209138-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4896242							
<b>WG3208979-7</b>	<b>DUP</b>	<b>L2375651-5</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	01-NOV-19
<b>WG3208979-2</b>	<b>LCS</b>							
Bromide (Br)			109.7		%		85-115	01-NOV-19
<b>WG3208979-6</b>	<b>LCS</b>							
Bromide (Br)			111.8		%		85-115	01-NOV-19
<b>WG3208979-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-NOV-19
<b>WG3208979-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	01-NOV-19
<b>WG3208979-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Bromide (Br)			109.9		%		75-125	01-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4898869							
<b>WG3210919-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.4		%		80-120	04-NOV-19
<b>WG3210919-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4898869							
WG3210919-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4898869							
WG3210919-2	LCS							
Total Organic Carbon			103.9		%		80-120	04-NOV-19
WG3210919-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4896242							
WG3208979-7	DUP	L2375651-5						
Chloride (Cl)			<0.50	RPD-NA	mg/L	N/A	20	01-NOV-19
WG3208979-2	LCS							
Chloride (Cl)			108.0		%		90-110	01-NOV-19
WG3208979-6	LCS							
Chloride (Cl)			107.8		%		90-110	01-NOV-19
WG3208979-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	01-NOV-19
WG3208979-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	01-NOV-19
WG3208979-8	MS	L2375651-5						
Chloride (Cl)			111.4		%		75-125	01-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4897006							
WG3209642-18	DUP	L2375651-1						
Conductivity (@ 25C)			2550		uS/cm	1.2	10	01-NOV-19
WG3209642-17	LCS							
Conductivity (@ 25C)			94.3		%		90-110	01-NOV-19
WG3209642-16	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4896242							
WG3208979-7	DUP	L2375651-5						
Fluoride (F)			<0.020	RPD-NA	mg/L	N/A	20	01-NOV-19
WG3208979-2	LCS							
Fluoride (F)			108.6		%		90-110	01-NOV-19
WG3208979-6	LCS							



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4896242</b>							
<b>WG3208979-6</b>	<b>LCS</b>							
Fluoride (F)			108.5		%		90-110	01-NOV-19
<b>WG3208979-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-NOV-19
<b>WG3208979-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	01-NOV-19
<b>WG3208979-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Fluoride (F)			113.2		%		75-125	01-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4898478</b>							
<b>WG3209761-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			95.7		%		80-120	05-NOV-19
<b>WG3209761-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	05-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			97.5		%		80-120	03-NOV-19
Antimony (Sb)-Dissolved			92.9		%		80-120	03-NOV-19
Arsenic (As)-Dissolved			94.6		%		80-120	03-NOV-19
Barium (Ba)-Dissolved			103.6		%		80-120	03-NOV-19
Bismuth (Bi)-Dissolved			92.8		%		80-120	03-NOV-19
Boron (B)-Dissolved			98.9		%		80-120	03-NOV-19
Cadmium (Cd)-Dissolved			100.3		%		80-120	03-NOV-19
Calcium (Ca)-Dissolved			100.5		%		80-120	03-NOV-19
Chromium (Cr)-Dissolved			94.3		%		80-120	03-NOV-19
Cobalt (Co)-Dissolved			96.2		%		80-120	03-NOV-19
Copper (Cu)-Dissolved			96.3		%		80-120	03-NOV-19
Iron (Fe)-Dissolved			96.7		%		80-120	03-NOV-19
Lead (Pb)-Dissolved			95.0		%		80-120	03-NOV-19
Lithium (Li)-Dissolved			99.8		%		80-120	03-NOV-19
Magnesium (Mg)-Dissolved			96.1		%		80-120	03-NOV-19
Manganese (Mn)-Dissolved			93.1		%		80-120	03-NOV-19
Molybdenum (Mo)-Dissolved			97.2		%		80-120	03-NOV-19
Nickel (Ni)-Dissolved			95.3		%		80-120	03-NOV-19
Potassium (K)-Dissolved			94.9		%		80-120	03-NOV-19



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-2</b>	<b>LCS</b>							
Selenium (Se)-Dissolved			103.8		%		80-120	03-NOV-19
Silicon (Si)-Dissolved			97.5		%		60-140	03-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	03-NOV-19
Sodium (Na)-Dissolved			97.3		%		80-120	03-NOV-19
Strontium (Sr)-Dissolved			94.1		%		80-120	03-NOV-19
Thallium (Tl)-Dissolved			97.2		%		80-120	03-NOV-19
Tin (Sn)-Dissolved			96.3		%		80-120	03-NOV-19
Titanium (Ti)-Dissolved			93.0		%		80-120	03-NOV-19
Uranium (U)-Dissolved			91.9		%		80-120	03-NOV-19
Vanadium (V)-Dissolved			96.4		%		80-120	03-NOV-19
Zinc (Zn)-Dissolved			94.8		%		80-120	03-NOV-19
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897877</b>							
<b>WG3209138-1</b>	<b>MB</b>	<b>NP</b>						
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-51</b>	<b>DUP</b>	<b>L2375651-5</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3211471-18</b>	<b>LCS</b>							
Ammonia as N			107.9		%		85-115	05-NOV-19
<b>WG3211471-22</b>	<b>LCS</b>							
Ammonia as N			108.0		%		85-115	05-NOV-19
<b>WG3211471-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>WG3211471-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>WG3211471-52</b>	<b>MS</b>	<b>L2375651-5</b>						
Ammonia as N			106.8		%		75-125	05-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896242</b>							
<b>WG3208979-7</b>	<b>DUP</b>	<b>L2375651-5</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	01-NOV-19
<b>WG3208979-2</b>	<b>LCS</b>							
Nitrite (as N)			107.8		%		90-110	01-NOV-19
<b>WG3208979-6</b>	<b>LCS</b>							
Nitrite (as N)			107.9		%		90-110	01-NOV-19
<b>WG3208979-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-NOV-19
<b>WG3208979-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	01-NOV-19
<b>WG3208979-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Nitrite (as N)			112.0		%		75-125	01-NOV-19



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4896242</b>								
<b>WG3208979-7</b>	<b>DUP</b>	<b>L2375651-5</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-NOV-19
<b>WG3208979-2</b>	<b>LCS</b>							
Nitrate (as N)			107.5		%		90-110	01-NOV-19
<b>WG3208979-6</b>	<b>LCS</b>							
Nitrate (as N)			108.0		%		90-110	01-NOV-19
<b>WG3208979-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-NOV-19
<b>WG3208979-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	01-NOV-19
<b>WG3208979-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Nitrate (as N)			111.2		%		75-125	01-NOV-19
<b>ORP-CL</b>								
<b>Batch R4896000</b>								
<b>WG3208584-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			218		mV		210-230	01-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4897866</b>								
<b>WG3209926-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.5		%		80-120	04-NOV-19
<b>WG3209926-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-NOV-19
<b>PH-CL</b>								
<b>Batch R4897006</b>								
<b>WG3209642-18</b>	<b>DUP</b>	<b>L2375651-1</b>						
pH		8.37	8.38	J	pH	0.01	0.2	01-NOV-19
<b>WG3209642-17</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	01-NOV-19
<b>PO4-DO-L-COL-CL</b>								
<b>Batch R4895904</b>								
<b>WG3208493-9</b>	<b>DUP</b>	<b>L2375651-4</b>						
Orthophosphate-Dissolved (as P)		0.0036	0.0036		mg/L	0.3	20	01-NOV-19
<b>WG3208493-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			96.4		%		80-120	01-NOV-19
<b>WG3208493-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.4		%		80-120	01-NOV-19
<b>WG3208493-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4895904</b>							
<b>WG3208493-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-NOV-19
<b>WG3208493-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	01-NOV-19
<b>WG3208493-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Orthophosphate-Dissolved (as P)			98.2		%		70-130	01-NOV-19
<b>SO4-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896242</b>							
<b>WG3208979-7</b>	<b>DUP</b>	<b>L2375651-5</b>						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	01-NOV-19
<b>WG3208979-2</b>	<b>LCS</b>							
Sulfate (SO4)			107.5		%		90-110	01-NOV-19
<b>WG3208979-6</b>	<b>LCS</b>							
Sulfate (SO4)			107.3		%		90-110	01-NOV-19
<b>WG3208979-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-NOV-19
<b>WG3208979-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	01-NOV-19
<b>WG3208979-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Sulfate (SO4)			111.3		%		75-125	01-NOV-19
<b>SOLIDS-TDS-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900577</b>							
<b>WG3210718-6</b>	<b>DUP</b>	<b>L2375651-1</b>						
Total Dissolved Solids		1480	1460		mg/L	1.6	20	05-NOV-19
<b>WG3210718-5</b>	<b>LCS</b>							
Total Dissolved Solids			99.9		%		85-115	05-NOV-19
<b>WG3210718-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	05-NOV-19
<b>TKN-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4896222</b>							
<b>WG3208954-7</b>	<b>DUP</b>	<b>L2375651-5</b>						
Total Kjeldahl Nitrogen		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-NOV-19
<b>WG3208954-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.2		%		75-125	02-NOV-19
<b>WG3208954-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-NOV-19
<b>WG3208954-8</b>	<b>MS</b>	<b>L2375651-5</b>						
Total Kjeldahl Nitrogen			111.7		%		70-130	02-NOV-19



## Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4898758							
<b>WG3209732-4</b>	<b>LCS</b>							
Total Suspended Solids			95.3		%		85-115	04-NOV-19
<b>WG3209732-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	04-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4896011							
<b>WG3208580-2</b>	<b>LCS</b>							
Turbidity			99.0		%		85-115	01-NOV-19
<b>WG3208580-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	01-NOV-19



# Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2375651

Report Date: 08-NOV-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	31-OCT-19 11:47	01-NOV-19 13:00	0.25	25	hours	EHTR-FM
	2	31-OCT-19 13:43	01-NOV-19 13:00	0.25	23	hours	EHTR-FM
	3	31-OCT-19 15:05	01-NOV-19 13:00	0.25	22	hours	EHTR-FM
	4	31-OCT-19 12:00	01-NOV-19 13:00	0.25	25	hours	EHTR-FM
	5	31-OCT-19 12:00	01-NOV-19 13:00	0.25	25	hours	EHTR-FM
pH							
	1	31-OCT-19 11:47	01-NOV-19 11:00	0.25	23	hours	EHTR-FM
	2	31-OCT-19 13:43	01-NOV-19 11:00	0.25	21	hours	EHTR-FM
	3	31-OCT-19 15:05	01-NOV-19 11:00	0.25	20	hours	EHTR-FM
	4	31-OCT-19 12:00	01-NOV-19 11:00	0.25	23	hours	EHTR-FM
	5	31-OCT-19 12:00	01-NOV-19 11:00	0.25	23	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

## Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2375651 were received on 01-NOV-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

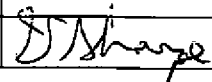
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>COC_WG_Q4_20191031</b>		TURNAROUND TIME: <b>REGULAR</b>			RUSH: <b>No</b>				
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Coal Mountain Operations				Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Jay Jones				Lab Contact Lyudmyla Shvets			Email 1: victoria.sharpe@teck.com X X X		
Email Jay.Jones@teck.com				Email Lyudmyla.Shvets@alsglobal.com			Email 2: teckcoal@equisonline.com		
Address PO Box 3000				Address 2559 29th St. NE			Email 3: jay.jones@teck.com X X X		
City Sparwood		Province BC		City Calgary		Province AB		Email 5: don.sacino@teck.com X X X	
Postal Code V0B 2G0		Country Canada		Postal Code T1Y 7B5		Country Canada		Email 6: scott.holmgren@teck.com X X X	
Phone Number 1-250-425-7321				Phone Number 403 407 1800			PO number 611069		

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F Field, L Lab, FL Field & Lab, N None											
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	F	N	F	F	N							
1 CM_MW3-DP_WG_2019-10-14_N	CM_MW3-DP	WG	No	2019/10/31	11:47	G	5	1	1	1	1	1	1	1										
2 CM_MW3-SH_WG_2019-10-14_N	CM_MW3-SH	WG	No	2019/10/31	13:43	G	5	1	1	1	1	1	1	1										
3 CM_MW2-SH_WG_2019-10-14_N	CM_MW2-SH	WG	No	2019/10/31	15:05	G	5	1	1	1	1	1	1	1										
4 CM_NNP_WS_2019-10-14_N	CM_NNP	WG	No	2019/10/31	-	G	5	1	1	1	1	1	1	1										
5 CM_NNT_WS_2019-10-14_N	CM_NNT	WG	No	2019/10/31	-	G	5	1	1	1	1	1	1	1										

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>		<b>RELINQUISHED BY/AFFILIATION</b>		<b>DATE/TIME</b>		<b>ACCEPTED BY/AFFILIATION</b>		<b>DATE/TIME</b>	
Please send metals to ALS Burnaby.								11/01 9:00	

<b>SERVICE REQUEST (rush - subject to availability)</b>		<b>VS/SII/MC</b>		<b>Mobile #</b>		<b>250 425 7522</b>	
Regular (default) X		Sampler's Name		Date/Time		October 31, 2019 - 17:00	
Priority (2-3 business days) - 50% surcharge		Sampler's Signature 					
Emergency (1 Business Day) - 100% surcharge							
For Emergency <1 Day, ASAP or Weekend - Contact ALS							

6C



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 02-NOV-19  
Report Date: 12-NOV-19 08:59 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2376286  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191101  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-1 CM_MW1-DP_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 15:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.10		0.50	mg/L		04-NOV-19	R4898807
Total Kjeldahl Nitrogen	0.709		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	1.14		0.50	mg/L		04-NOV-19	R4898807
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	0.0050		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00146		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	12.2		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.257		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	31.7		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	0.50		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00076		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	0.016		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.774		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	19.4		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.117		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.00395		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	5.83		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	05-NOV-19	06-NOV-19	R4901748
Silicon (Si)-Dissolved	4.93		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	246		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	2.67		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	0.00026		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.000500		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0052		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	159		0.50	mg/L		07-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.3		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	360		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-1 CM_MW1-DP_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 15:00							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	360		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.595	DLHC	0.025	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.77	DLHC	0.25	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	237	DLHC	2.5	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1280		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.21	DLHC	0.10	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		07-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.1			%		07-NOV-19	
Anion Sum	14.0			meq/L		07-NOV-19	
Cation Sum	14.0			meq/L		07-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.363	DLHC	0.025	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0252		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation reduction potential by elect.</b>							
ORP	445		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0657		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	4.3	DLHC	1.5	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	748	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	5.5		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b>							
Turbidity	6.48		0.10	NTU		03-NOV-19	R4896593
<b>pH</b>							
pH	8.07		0.10	pH		04-NOV-19	R4898708
L2376286-2 CM_MW1-OB_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 13:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898807
Total Kjeldahl Nitrogen	0.102		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898807
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-2 CM_MW1-OB_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 13:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.108		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.045		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	0.0808		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	168		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	0.00038		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00065		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0264		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	55.6		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.00015		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.000252		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	2.27		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	2.60		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	3.49		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	67.2		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	0.521		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	0.000020		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.00135		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0105		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	650		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.5		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	309		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	309		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0124		0.0050	mg/L		07-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	108	DLHC	2.5	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1070		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.11	DLHC	0.10	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-2 CM_MW1-OB_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 13:00 Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.3			%		06-NOV-19	
Anion Sum	15.6			meq/L		06-NOV-19	
Cation Sum	16.0			meq/L		06-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.657	DLHC	0.025	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0027		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b>							
ORP	469		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0024		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	302	DLHC	1.5	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	913	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b>							
Turbidity	<0.10		0.10	NTU		03-NOV-19	R4896593
<b>pH</b>							
pH	8.04		0.10	pH		04-NOV-19	R4898708
L2376286-3 CM_MW1-SH_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 13:22 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898807
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	0.54		0.50	mg/L		04-NOV-19	R4898807
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	0.0038		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00199		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.375		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.060		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	<0.015	DLM	0.015	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	30.6		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	0.24		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-3 CM_MW1-SH_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 13:22							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	0.673		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0199		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	12.0		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.167		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.0540		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	1.17		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	3.81		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	176		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	0.354		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.000664		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	126		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.1		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	292		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	292		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0551		0.0050	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.755		0.050	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	191		0.50	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1050		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.854		0.020	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Ion Balance	89.3		-100	%		06-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-5.7			%		06-NOV-19	
Anion Sum	11.5			meq/L		06-NOV-19	
Cation Sum	10.2			meq/L		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-NOV-19	R4896841

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-3 CM_MW1-SH_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 13:22 Matrix: WG							
<b>Oxidation redution potential by elect.</b> ORP	325		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	0.0081		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b> Sulfate (SO4)	10.3		0.30	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b> Total Dissolved Solids	526	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b> Total Suspended Solids	5.6		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b> Turbidity	6.69		0.10	NTU		03-NOV-19	R4896593
<b>pH</b> pH	8.07		0.10	pH		04-NOV-19	R4898708
L2376286-4 CM_MW7-DP_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 10:30 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.61		0.50	mg/L		05-NOV-19	R4900411
Total Kjeldahl Nitrogen	0.083	TKNI	0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	0.91		0.50	mg/L		05-NOV-19	R4900411
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	0.00028		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.0157		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.062		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	0.330		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	383		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	0.00046		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	0.96		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00077		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0634		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	146		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.345		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.000222		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	0.0185		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	2.85		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	10.4		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	2.47		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-4 CM_MW7-DP_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 10:30							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Sodium (Na)-Dissolved	28.2		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	1.03		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	0.00025		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.00495		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0264		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	1560		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	12.1		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	407		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	407		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		07-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	2.6	DLHC	2.5	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1500		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.12	DLHC	0.10	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		06-NOV-19	
Anion Sum	32.4			meq/L		06-NOV-19	
Cation Sum	32.4			meq/L		06-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	100		-100	%		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	2.34	DLHC	0.025	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.218	DLHC	0.0050	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b>							
ORP	393		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	1150	DLHC	1.5	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	2020	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	3.3		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b>							
Turbidity	0.48		0.10	NTU		03-NOV-19	R4896593

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-4 CM_MW7-DP_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 10:30 Matrix: WG							
<b>pH</b> pH	7.94		0.10	pH		04-NOV-19	R4898708
L2376286-5 CM_MW7-SH_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 10:15 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.07		0.50	mg/L		05-NOV-19	R4900411
Total Kjeldahl Nitrogen	0.133		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	3.10		0.50	mg/L		05-NOV-19	R4900411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.000050		0.000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00042		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.0362		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.046		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	0.0133		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	151		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	0.75		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00049		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	0.735		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0077		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	47.7		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.193		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.00147		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	0.00131		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	1.90		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	5.04		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	19.4		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	0.556		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.000988		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0068		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	572		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-5 CM_MW7-SH_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 10:15 Matrix: WG							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	6.7		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	283		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	283		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0940		0.0050	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	12.6		0.50	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	899		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.214		0.020	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.4			%		06-NOV-19	
Anion Sum	11.8			meq/L		06-NOV-19	
Cation Sum	12.4			meq/L		06-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	105		-100	%		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0136		0.0050	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0028		0.0010	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b>							
ORP	441		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0096		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	276		0.30	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	703	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	25.3		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b>							
Turbidity	11.8		0.10	NTU		03-NOV-19	R4896593
<b>pH</b>							
pH	7.99		0.10	pH		04-NOV-19	R4898708
L2376286-6 CM_MW8_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 11:09 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	0.57		0.50	mg/L		05-NOV-19	R4900411
Total Kjeldahl Nitrogen	0.974		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	0.68		0.50	mg/L		05-NOV-19	R4900411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-6 CM_MW8_WG_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 11:09							
Matrix: WG							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00012		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.110		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.310		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	73.2		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	0.36		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00034		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	0.110		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0678		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	21.0		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.150		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.000665		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	2.91		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	6.27		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	49.4		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	5.79		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	0.00025		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.000354		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0119		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	269		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	2.3		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	316		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	316		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.897	DLHC	0.025	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.75		0.50	mg/L		03-NOV-19	R4897309

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-6 CM_MW8_WG_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 11:09 Matrix: WG							
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	593		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.294		0.020	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Ion Balance	102		-100	%		06-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.9			%		06-NOV-19	
Anion Sum	7.47			meq/L		06-NOV-19	
Cation Sum	7.62			meq/L		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.0402		0.0050	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0020		0.0010	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b>							
ORP	390		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0204		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	52.5		0.30	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	379	DLHC	20	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b>							
Total Suspended Solids	7.1		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b>							
Turbidity	11.1		0.10	NTU		03-NOV-19	R4896593
<b>pH</b>							
pH	8.15		0.10	pH		04-NOV-19	R4898708
L2376286-7 CM_TRP_WS_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898823
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	<0.50		0.50	mg/L		04-NOV-19	R4898823
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-7 CM_TRP_WS_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	<0.050		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	<0.0010		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Potassium (K)-Dissolved	<0.050		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	<0.050		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	<0.050		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	<0.00020		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	<0.50		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	1.8		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		07-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	<0.50		0.50	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	<2.0		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	<0.020		0.020	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.0			%		06-NOV-19	
Anion Sum	<0.10			meq/L		06-NOV-19	
Cation Sum	<0.10			meq/L		06-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	0.0		-100	%		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		03-NOV-19	R4897309

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-7 CM_TRP_WS_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 12:00 Matrix: WG							
<b>Nitrite in Water by IC (Low Level)</b> Nitrite (as N)	<0.0010		0.0010	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b> Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b> ORP	426		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b> Phosphorus (P)-Total	<0.0020		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b> Sulfate (SO4)	<0.30		0.30	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b> Total Dissolved Solids	<10		10	mg/L		05-NOV-19	R4900577
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		03-NOV-19	R4896593
<b>pH</b> pH	5.50		0.10	pH		04-NOV-19	R4898708
L2376286-8 CM_NNP2_WS_2019-10-14_N Sampled By: VS/MC on 01-NOV-19 @ 12:00 Matrix: WG							
<b>Miscellaneous Parameters</b> Dissolved Organic Carbon	0.55		0.50	mg/L		04-NOV-19	R4898823
Total Kjeldahl Nitrogen	0.160		0.050	mg/L		04-NOV-19	R4897727
Total Organic Carbon	0.64		0.50	mg/L		04-NOV-19	R4898823
<b>Dissolved Metals in Water</b> <b>Diss. Be (low) in Water by CRC ICPMS</b> Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	05-NOV-19	06-NOV-19	R4901098
Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
<b>Diss. Mercury in Water by CVAAS or CVAFS</b> Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	06-NOV-19	07-NOV-19	R4901447
Dissolved Mercury Filtration Location	FIELD					06-NOV-19	R4900180
<b>Dissolved Metals in Water by CRC ICPMS</b> Dissolved Metals Filtration Location	FIELD					05-NOV-19	R4899369
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	05-NOV-19	06-NOV-19	R4901098
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Barium (Ba)-Dissolved	0.107		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Boron (B)-Dissolved	0.046		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cadmium (Cd)-Dissolved	0.0833		0.0050	ug/L	05-NOV-19	06-NOV-19	R4901098
Calcium (Ca)-Dissolved	169		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Chromium (Cr)-Dissolved	0.00044		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	05-NOV-19	06-NOV-19	R4901098
Copper (Cu)-Dissolved	0.00076		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Lithium (Li)-Dissolved	0.0252		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
Magnesium (Mg)-Dissolved	55.4		0.10	mg/L	05-NOV-19	06-NOV-19	R4901098
Manganese (Mn)-Dissolved	0.00022		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Molybdenum (Mo)-Dissolved	0.000244		0.000050	mg/L	05-NOV-19	06-NOV-19	R4901098
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-8 CM_NNP2_WS_2019-10-14_N							
Sampled By: VS/MC on 01-NOV-19 @ 12:00							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Potassium (K)-Dissolved	2.27		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Selenium (Se)-Dissolved	2.39		0.050	ug/L	05-NOV-19	06-NOV-19	R4901098
Silicon (Si)-Dissolved	3.39		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Sodium (Na)-Dissolved	67.9		0.050	mg/L	05-NOV-19	06-NOV-19	R4901098
Strontium (Sr)-Dissolved	0.514		0.00020	mg/L	05-NOV-19	06-NOV-19	R4901098
Thallium (Tl)-Dissolved	0.000018		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Tin (Sn)-Dissolved	0.00022		0.00010	mg/L	05-NOV-19	06-NOV-19	R4901098
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	05-NOV-19	06-NOV-19	R4901098
Uranium (U)-Dissolved	0.00140		0.000010	mg/L	05-NOV-19	06-NOV-19	R4901098
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	05-NOV-19	06-NOV-19	R4901098
Zinc (Zn)-Dissolved	0.0131		0.0010	mg/L	05-NOV-19	06-NOV-19	R4901098
<b>Hardness</b>							
Hardness (as CaCO3)	651		0.50	mg/L		06-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.0		1.0	mg/L		04-NOV-19	R4898668
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	312		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		04-NOV-19	R4898708
Alkalinity, Total (as CaCO3)	312		1.0	mg/L		04-NOV-19	R4898708
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0172	RRV	0.0050	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		03-NOV-19	R4897309
<b>Chloride in Water by IC</b>							
Chloride (Cl)	106	DLHC	2.5	mg/L		03-NOV-19	R4897309
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1200		2.0	uS/cm		04-NOV-19	R4898708
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.11	DLHC	0.10	mg/L		03-NOV-19	R4897309
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.3			%		06-NOV-19	
Anion Sum	15.6			meq/L		06-NOV-19	
Cation Sum	16.0			meq/L		06-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	103		-100	%		06-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.636	DLHC	0.025	mg/L		03-NOV-19	R4897309
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		03-NOV-19	R4897309
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0032		0.0010	mg/L		03-NOV-19	R4896841
<b>Oxidation redution potential by elect.</b>							
ORP	374		-1000	mV		03-NOV-19	R4896585
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0027		0.0020	mg/L		05-NOV-19	R4898897
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	303	DLHC	1.5	mg/L		03-NOV-19	R4897309
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	863	DLHC	20	mg/L		05-NOV-19	R4900577

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376286-8    CM_NNP2_WS_2019-10-14_N Sampled By:   VS/MC on 01-NOV-19 @ 12:00 Matrix:        WG							
<b>Total Suspended Solids</b> Total Suspended Solids	<1.0		1.0	mg/L		05-NOV-19	R4900626
<b>Turbidity</b> Turbidity	<0.10		0.10	NTU		03-NOV-19	R4896593
<b>pH</b> pH	7.99		0.10	pH		04-NOV-19	R4898708

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p> <p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.</p> <p>It is recommended that this analysis be conducted in the field.</p>			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PH-CL	Water	pH	APHA 4500 H-Electrode
<p>pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)</p>			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.</p>			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
<p>A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).</p>			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p> <p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p> <p style="text-align: center;">Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
<p>This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.</p>			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric

# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
--------------	-------	-----------	--------------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

COC\_WG\_Q4\_20191101

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 1 of 10

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
<b>ACIDITY-PCT-CL</b>		<b>Water</b>							
Batch R4898668									
WG3210664-6	DUP	L2376286-2							
Acidity (as CaCO3)			7.5	6.4	mg/L	16	20	04-NOV-19	
WG3210664-5	LCS								
Acidity (as CaCO3)				99.2	%		85-115	04-NOV-19	
WG3210664-8	LCS								
Acidity (as CaCO3)				100.9	%		85-115	04-NOV-19	
WG3210664-4	MB								
Acidity (as CaCO3)				1.7	mg/L		2	04-NOV-19	
WG3210664-7	MB								
Acidity (as CaCO3)				1.6	mg/L		2	04-NOV-19	
<b>ALK-MAN-CL</b>		<b>Water</b>							
Batch R4898708									
WG3210675-12	DUP	L2376286-2							
Alkalinity, Total (as CaCO3)			309	310	mg/L	0.3	20	04-NOV-19	
WG3210675-11	LCS								
Alkalinity, Total (as CaCO3)				99.8	%		85-115	04-NOV-19	
WG3210675-10	MB								
Alkalinity, Total (as CaCO3)				<1.0	mg/L		1	04-NOV-19	
<b>BE-D-L-CCMS-VA</b>		<b>Water</b>							
Batch R4901098									
WG3211507-2	LCS								
Beryllium (Be)-Dissolved				96.0	%		80-120	06-NOV-19	
WG3211507-1	MB	NP							
Beryllium (Be)-Dissolved				<0.000020	mg/L		0.00002	06-NOV-19	
<b>BR-L-IC-N-CL</b>		<b>Water</b>							
Batch R4897309									
WG3209898-3	DUP	L2376286-7							
Bromide (Br)			<0.050	<0.050	mg/L	RPD-NA	N/A	20	03-NOV-19
WG3209898-2	LCS								
Bromide (Br)				100.1	%		85-115	03-NOV-19	
WG3209898-1	MB								
Bromide (Br)				<0.050	mg/L		0.05	03-NOV-19	
WG3209898-4	MS	L2376286-7							
Bromide (Br)				102.3	%		75-125	03-NOV-19	
<b>C-DIS-ORG-LOW-CL</b>		<b>Water</b>							



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4898807</b>							
<b>WG3210895-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.1		%		80-120	04-NOV-19
<b>WG3210895-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>Batch</b>	<b>R4898823</b>							
<b>WG3210907-18</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.7		%		80-120	04-NOV-19
<b>WG3210907-17</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>Batch</b>	<b>R4900411</b>							
<b>WG3212038-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4898807</b>							
<b>WG3210895-10</b>	<b>LCS</b>							
Total Organic Carbon			102.3		%		80-120	04-NOV-19
<b>WG3210895-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>Batch</b>	<b>R4898823</b>							
<b>WG3210907-18</b>	<b>LCS</b>							
Total Organic Carbon			101.7		%		80-120	04-NOV-19
<b>WG3210907-17</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
<b>Batch</b>	<b>R4900411</b>							
<b>WG3212038-10</b>	<b>LCS</b>							
Total Organic Carbon			104.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4897309</b>							
<b>WG3209898-3</b>	<b>DUP</b>	<b>L2376286-7</b>						
Chloride (Cl)		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209898-2</b>	<b>LCS</b>							
Chloride (Cl)			100.6		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	03-NOV-19





## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4897309</b>								
<b>WG3209898-4 MS</b>		<b>L2376286-7</b>						
Chloride (Cl)	Water		102.1		%		75-125	03-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4898708</b>								
<b>WG3210675-12 DUP</b>		<b>L2376286-2</b>						
Conductivity (@ 25C)	Water	1070	1070		uS/cm	0.1	10	04-NOV-19
<b>WG3210675-11 LCS</b>								
Conductivity (@ 25C)			93.9		%		90-110	04-NOV-19
<b>WG3210675-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	04-NOV-19
<b>F-IC-N-CL</b>								
<b>Batch R4897309</b>								
<b>WG3209898-3 DUP</b>		<b>L2376286-7</b>						
Fluoride (F)	Water	<0.020	<0.020	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209898-2 LCS</b>								
Fluoride (F)			104.4		%		90-110	03-NOV-19
<b>WG3209898-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	03-NOV-19
<b>WG3209898-4 MS</b>		<b>L2376286-7</b>						
Fluoride (F)			106.7		%		75-125	03-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4901447</b>								
<b>WG3211964-3 DUP</b>		<b>L2376286-2</b>						
Mercury (Hg)-Dissolved	Water	<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-NOV-19
<b>WG3211964-2 LCS</b>								
Mercury (Hg)-Dissolved			99.4		%		80-120	07-NOV-19
<b>WG3211964-1 MB</b>								
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	07-NOV-19
<b>WG3211964-4 MS</b>		<b>L2376286-1</b>						
Mercury (Hg)-Dissolved			88.0		%		70-130	07-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4901098</b>								
<b>WG3211507-2 LCS</b>								
Aluminum (Al)-Dissolved	Water		107.4		%		80-120	06-NOV-19
Antimony (Sb)-Dissolved			95.9		%		80-120	06-NOV-19
Arsenic (As)-Dissolved			101.2		%		80-120	06-NOV-19



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			101.3		%		80-120	06-NOV-19
Bismuth (Bi)-Dissolved			110.1		%		80-120	06-NOV-19
Boron (B)-Dissolved			92.6		%		80-120	06-NOV-19
Cadmium (Cd)-Dissolved			100.5		%		80-120	06-NOV-19
Calcium (Ca)-Dissolved			97.2		%		80-120	06-NOV-19
Chromium (Cr)-Dissolved			103.3		%		80-120	06-NOV-19
Cobalt (Co)-Dissolved			101.6		%		80-120	06-NOV-19
Copper (Cu)-Dissolved			102.7		%		80-120	06-NOV-19
Iron (Fe)-Dissolved			100.8		%		80-120	06-NOV-19
Lead (Pb)-Dissolved			96.8		%		80-120	06-NOV-19
Lithium (Li)-Dissolved			96.5		%		80-120	06-NOV-19
Magnesium (Mg)-Dissolved			100.6		%		80-120	06-NOV-19
Manganese (Mn)-Dissolved			100.9		%		80-120	06-NOV-19
Molybdenum (Mo)-Dissolved			103.8		%		80-120	06-NOV-19
Nickel (Ni)-Dissolved			103.9		%		80-120	06-NOV-19
Potassium (K)-Dissolved			106.1		%		80-120	06-NOV-19
Selenium (Se)-Dissolved			105.0		%		80-120	06-NOV-19
Silicon (Si)-Dissolved			101.2		%		60-140	06-NOV-19
Silver (Ag)-Dissolved			98.0		%		80-120	06-NOV-19
Sodium (Na)-Dissolved			105.9		%		80-120	06-NOV-19
Strontium (Sr)-Dissolved			102.1		%		80-120	06-NOV-19
Thallium (Tl)-Dissolved			98.1		%		80-120	06-NOV-19
Tin (Sn)-Dissolved			97.6		%		80-120	06-NOV-19
Titanium (Ti)-Dissolved			101.0		%		80-120	06-NOV-19
Uranium (U)-Dissolved			95.2		%		80-120	06-NOV-19
Vanadium (V)-Dissolved			106.0		%		80-120	06-NOV-19
Zinc (Zn)-Dissolved			113.1		%		80-120	06-NOV-19
<b>WG3211507-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-NOV-19



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901098</b>							
<b>WG3211507-1</b>	<b>MB</b>	<b>NP</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902578</b>							
<b>WG3212385-18</b>	<b>LCS</b>							
Ammonia as N			109.2		%		85-115	06-NOV-19
<b>WG3212385-26</b>	<b>LCS</b>							
Ammonia as N			109.9		%		85-115	06-NOV-19
<b>WG3212385-17</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-NOV-19
<b>WG3212385-25</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>								
<b>Batch R4897309</b>								
<b>WG3209898-3</b>	<b>DUP</b>	<b>L2376286-7</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209898-2</b>	<b>LCS</b>							
Nitrite (as N)			102.2		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	03-NOV-19
<b>WG3209898-4</b>	<b>MS</b>	<b>L2376286-7</b>						
Nitrite (as N)			103.5		%		75-125	03-NOV-19
<b>NO3-L-IC-N-CL</b>								
<b>Batch R4897309</b>								
<b>WG3209898-3</b>	<b>DUP</b>	<b>L2376286-7</b>						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209898-2</b>	<b>LCS</b>							
Nitrate (as N)			100.8		%		90-110	03-NOV-19
<b>WG3209898-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	03-NOV-19
<b>WG3209898-4</b>	<b>MS</b>	<b>L2376286-7</b>						
Nitrate (as N)			102.4		%		75-125	03-NOV-19
<b>ORP-CL</b>								
<b>Batch R4896585</b>								
<b>WG3209245-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			219		mV		210-230	03-NOV-19
<b>P-T-L-COL-CL</b>								
<b>Batch R4898897</b>								
<b>WG3211001-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.0		%		80-120	05-NOV-19
<b>WG3211001-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	05-NOV-19
<b>PH-CL</b>								
<b>Batch R4898708</b>								
<b>WG3210675-12</b>	<b>DUP</b>	<b>L2376286-2</b>						
pH		8.04	8.02	J	pH	0.02	0.2	04-NOV-19
<b>WG3210675-11</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	04-NOV-19
<b>PO4-DO-L-COL-CL</b>								
<b>Water</b>								



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b> <b>Water</b>								
Batch      R4896841								
<b>WG3209030-6</b> <b>LCS</b>								
Orthophosphate-Dissolved (as P)			103.8		%		80-120	02-NOV-19
<b>WG3209030-5</b> <b>MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	02-NOV-19
<b>SO4-IC-N-CL</b> <b>Water</b>								
Batch      R4897309								
<b>WG3209898-3</b> <b>DUP</b>								
Sulfate (SO4)		<b>L2376286-7</b>	<0.30	RPD-NA	mg/L	N/A	20	03-NOV-19
<b>WG3209898-2</b> <b>LCS</b>								
Sulfate (SO4)			101.6		%		90-110	03-NOV-19
<b>WG3209898-1</b> <b>MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	03-NOV-19
<b>WG3209898-4</b> <b>MS</b>								
Sulfate (SO4)		<b>L2376286-7</b>	102.7		%		75-125	03-NOV-19
<b>SOLIDS-TDS-CL</b> <b>Water</b>								
Batch      R4900577								
<b>WG3210718-8</b> <b>LCS</b>								
Total Dissolved Solids			96.8		%		85-115	05-NOV-19
<b>WG3210718-7</b> <b>MB</b>								
Total Dissolved Solids			<10		mg/L		10	05-NOV-19
<b>TKN-L-F-CL</b> <b>Water</b>								
Batch      R4897727								
<b>WG3209863-7</b> <b>DUP</b>								
Total Kjeldahl Nitrogen		<b>L2376286-7</b>	<0.050	RPD-NA	mg/L	N/A	20	04-NOV-19
<b>WG3209863-2</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			95.6		%		75-125	04-NOV-19
<b>WG3209863-6</b> <b>LCS</b>								
Total Kjeldahl Nitrogen			94.6		%		75-125	04-NOV-19
<b>WG3209863-1</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-NOV-19
<b>WG3209863-5</b> <b>MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	04-NOV-19
<b>WG3209863-8</b> <b>MS</b>								
Total Kjeldahl Nitrogen		<b>L2376286-7</b>	97.2		%		70-130	04-NOV-19
<b>TSS-L-CL</b> <b>Water</b>								



## Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4900626							
<b>WG3211289-4 LCS</b>								
Total Suspended Solids			98.4		%		85-115	05-NOV-19
<b>WG3211289-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	05-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4896593							
<b>WG3209244-12 DUP</b>		<b>L2376286-7</b>						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	03-NOV-19
<b>WG3209244-11 LCS</b>								
Turbidity			97.5		%		85-115	03-NOV-19
<b>WG3209244-10 MB</b>								
Turbidity			<0.10		NTU		0.1	03-NOV-19

# Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2376286

Report Date: 12-NOV-19

Page 10 of 10

**Hold Time Exceedances:**

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	01-NOV-19 15:00	03-NOV-19 09:00	0.25	42	hours	EHTR-FM
	2	01-NOV-19 13:00	03-NOV-19 09:00	0.25	44	hours	EHTR-FM
	3	01-NOV-19 13:22	03-NOV-19 09:00	0.25	44	hours	EHTR-FM
	4	01-NOV-19 10:30	03-NOV-19 09:00	0.25	47	hours	EHTR-FM
	5	01-NOV-19 10:15	03-NOV-19 09:00	0.25	47	hours	EHTR-FM
	6	01-NOV-19 11:09	03-NOV-19 09:00	0.25	46	hours	EHTR-FM
	7	01-NOV-19 12:00	03-NOV-19 09:00	0.25	45	hours	EHTR-FM
	8	01-NOV-19 12:00	03-NOV-19 09:00	0.25	45	hours	EHTR-FM
pH	1	01-NOV-19 15:00	04-NOV-19 10:00	0.25	67	hours	EHTR-FM
	2	01-NOV-19 13:00	04-NOV-19 10:00	0.25	69	hours	EHTR-FM
	3	01-NOV-19 13:22	04-NOV-19 10:00	0.25	69	hours	EHTR-FM
	4	01-NOV-19 10:30	04-NOV-19 10:00	0.25	72	hours	EHTR-FM
	5	01-NOV-19 10:15	04-NOV-19 10:00	0.25	72	hours	EHTR-FM
	6	01-NOV-19 11:09	04-NOV-19 10:00	0.25	71	hours	EHTR-FM
	7	01-NOV-19 12:00	04-NOV-19 10:00	0.25	70	hours	EHTR-FM
	8	01-NOV-19 12:00	04-NOV-19 10:00	0.25	70	hours	EHTR-FM

**Legend & Qualifier Definitions:**

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes\*:  
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2376286 were received on 02-NOV-19 13:54.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **COC\_WG\_Q4\_20191101**

TURNAROUND TIME: **REGULAR**

RUSH: **No**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution			
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	Excel	PDF	EDD
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			teckcoal@equisonline.com	X	X	X
Address	PO Box 3000			Address	2559 29th St. NE			Email 2:			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 3:	X	X	X
Postal Code	VOB 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			Email 6:	X	X	X
								PO number	611069		

**SAMPLE DETAILS**



L2376286-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED					Filtered - F: Field, L: Lab, FL: Field & Lab, N: None																											
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N																							
CM_MW1-DP_WG_2019-10-14_N	CM_MW1-DP	WG	No	2019/11/01	15:00	G	5	1	1	1	1	1																												
CM_MW1-OB_WG_2019-10-14_N	CM_MW1-OB	WG	No	2019/11/01	13:00	G	5	1	1	1	1	1																												
CM_MW1-SH_WG_2019-10-14_N	CM_MW1-SH	WG	No	2019/11/01	13:22	G	5	1	1	1	1	1																												
CM_MW7-DP_WG_2019-10-14_N	CM_MW7-DP	WG	No	2019/11/01	10:30	G	5	1	1	1	1	1																												
CM_MW7-SH_WG_2019-10-14_N	CM_MW7-SH	WG	No	2019/11/01	10:15	G	5	1	1	1	1	1																												
CM_MW8_WG_2019-10-14_N	CM_MW8	WG	No	2019/11/01	11:09	G	5	1	1	1	1	1																												
CM_TRP_WS_2019-10-14_N	CM_TRP	WG	No	2019/11/01	-	G	5	1	1	1	1	1																												
CM_NNP2_WS_2019-10-14_N	CM_NNP2	WG	No	2019/11/01	-	G	5	1	1	1	1	1																												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please send metals to ALS Burnaby.			<i>[Signature]</i>	13:54 Nov 2

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	VS/MC	Mobile #	250 425 7522
Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge				
<input type="checkbox"/>	Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS					



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 05-NOV-19  
Report Date: 08-NOV-19 17:16 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2376833  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191104  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376833-1 CM_MW4-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 04-NOV-19 @ 14:37							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		05-NOV-19	R4900411
Total Kjeldahl Nitrogen	0.428		0.050	mg/L		06-NOV-19	R4900635
Total Organic Carbon	0.71		0.50	mg/L		05-NOV-19	R4900411
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	06-NOV-19	06-NOV-19	R4901748
Dissolved Metals Filtration Location	FIELD					06-NOV-19	R4901324
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	08-NOV-19	08-NOV-19	R4903251
Dissolved Mercury Filtration Location	FIELD					08-NOV-19	R4903200
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					06-NOV-19	R4901324
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	06-NOV-19	06-NOV-19	R4901748
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Barium (Ba)-Dissolved	0.307		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	06-NOV-19	06-NOV-19	R4901748
Boron (B)-Dissolved	0.372		0.010	mg/L	06-NOV-19	06-NOV-19	R4901748
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	06-NOV-19	06-NOV-19	R4901748
Calcium (Ca)-Dissolved	6.82		0.050	mg/L	06-NOV-19	06-NOV-19	R4901748
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	06-NOV-19	06-NOV-19	R4901748
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	06-NOV-19	06-NOV-19	R4901748
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	06-NOV-19	06-NOV-19	R4901748
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	06-NOV-19	06-NOV-19	R4901748
Lithium (Li)-Dissolved	0.455		0.0010	mg/L	06-NOV-19	06-NOV-19	R4901748
Magnesium (Mg)-Dissolved	2.46		0.10	mg/L	06-NOV-19	06-NOV-19	R4901748
Manganese (Mn)-Dissolved	0.00538		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Molybdenum (Mo)-Dissolved	0.000792		0.000050	mg/L	06-NOV-19	06-NOV-19	R4901748
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	06-NOV-19	06-NOV-19	R4901748
Potassium (K)-Dissolved	1.13		0.050	mg/L	06-NOV-19	06-NOV-19	R4901748
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	06-NOV-19	06-NOV-19	R4901748
Silicon (Si)-Dissolved	4.37		0.050	mg/L	06-NOV-19	06-NOV-19	R4901748
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	06-NOV-19	06-NOV-19	R4901748
Sodium (Na)-Dissolved	371		0.050	mg/L	06-NOV-19	06-NOV-19	R4901748
Strontium (Sr)-Dissolved	0.711		0.00020	mg/L	06-NOV-19	06-NOV-19	R4901748
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	06-NOV-19	06-NOV-19	R4901748
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	06-NOV-19	06-NOV-19	R4901748
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	06-NOV-19	06-NOV-19	R4901748
Uranium (U)-Dissolved	0.000018		0.000010	mg/L	06-NOV-19	06-NOV-19	R4901748
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	06-NOV-19	06-NOV-19	R4901748
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	06-NOV-19	06-NOV-19	R4901748
<b>Hardness</b>							
Hardness (as CaCO3)	27.2		0.50	mg/L		07-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		05-NOV-19	R4900399
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	614		1.0	mg/L		05-NOV-19	R4898881
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		05-NOV-19	R4898881
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		05-NOV-19	R4898881

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2376833-1 CM_MW4-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 04-NOV-19 @ 14:37							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	614		1.0	mg/L		05-NOV-19	R4898881
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.450		0.0050	mg/L		05-NOV-19	R4900036
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.50	DLHC	0.25	mg/L		05-NOV-19	R4900768
<b>Chloride in Water by IC</b>							
Chloride (Cl)	145	DLHC	2.5	mg/L		05-NOV-19	R4900768
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1330		2.0	uS/cm		05-NOV-19	R4898881
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.36	DLHC	0.10	mg/L		05-NOV-19	R4900768
<b>Ion Balance Calculation</b>							
Ion Balance	102		-100	%		07-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	1.1			%		07-NOV-19	
Anion Sum	16.4			meq/L		07-NOV-19	
Cation Sum	16.7			meq/L		07-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.025	DLHC	0.025	mg/L		05-NOV-19	R4900768
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		05-NOV-19	R4900768
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0114		0.0010	mg/L		05-NOV-19	R4900090
<b>Oxidation redution potential by elect.</b>							
ORP	410		-1000	mV		05-NOV-19	R4899282
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0194		0.0020	mg/L		06-NOV-19	R4901159
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	<1.5	DLHC	1.5	mg/L		05-NOV-19	R4900768
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	874	DLHC	20	mg/L		06-NOV-19	R4902229
<b>Total Suspended Solids</b>							
Total Suspended Solids	6.0		1.0	mg/L		06-NOV-19	R4902443
<b>Turbidity</b>							
Turbidity	12.6		0.10	NTU		05-NOV-19	R4899311
<b>pH</b>							
pH	8.24		0.10	pH		05-NOV-19	R4898881

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q4\_20191104

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4900399							
<b>WG3211880-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.7		%		85-115	05-NOV-19
<b>WG3211880-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	05-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.4		%		85-115	05-NOV-19
<b>WG3211068-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4901748							
<b>WG3212661-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			107.2		%		80-120	06-NOV-19
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	06-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-2</b>	<b>LCS</b>							
Bromide (Br)			103.4		%		85-115	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	05-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4900411							
<b>WG3212038-11</b>	<b>DUP</b>	<b>L2376833-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	05-NOV-19
<b>WG3212038-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			106.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>WG3212038-12</b>	<b>MS</b>	<b>L2376833-1</b>						
Dissolved Organic Carbon			100.2		%		70-130	05-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4900411							
<b>WG3212038-11</b>	<b>DUP</b>	<b>L2376833-1</b>						
Total Organic Carbon		0.71	0.76		mg/L	7.2	20	05-NOV-19
<b>WG3212038-10</b>	<b>LCS</b>							





## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>								
Batch	R4900411							
<b>WG3212038-10</b>	<b>LCS</b>							
Total Organic Carbon			104.5		%		80-120	05-NOV-19
<b>WG3212038-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-NOV-19
<b>WG3212038-12</b>	<b>MS</b>	<b>L2376833-1</b>						
Total Organic Carbon			104.1		%		70-130	05-NOV-19
<b>CL-IC-N-CL</b>								
Batch	R4900768							
<b>WG3212150-2</b>	<b>LCS</b>							
Chloride (Cl)			101.8		%		90-110	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	05-NOV-19
<b>EC-L-PCT-CL</b>								
Batch	R4898881							
<b>WG3211068-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.4		%		90-110	05-NOV-19
<b>WG3211068-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-NOV-19
<b>F-IC-N-CL</b>								
Batch	R4900768							
<b>WG3212150-2</b>	<b>LCS</b>							
Fluoride (F)			106.9		%		90-110	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	05-NOV-19
<b>HG-D-CVAA-VA</b>								
Batch	R4903251							
<b>WG3214420-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			101.7		%		80-120	08-NOV-19
<b>WG3214420-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	08-NOV-19
<b>MET-D-CCMS-VA</b>								
Batch	R4901748							
<b>WG3212661-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			107.8		%		80-120	06-NOV-19
Antimony (Sb)-Dissolved			103.3		%		80-120	06-NOV-19
Arsenic (As)-Dissolved			99.1		%		80-120	06-NOV-19
Barium (Ba)-Dissolved			104.0		%		80-120	06-NOV-19



## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901748</b>							
<b>WG3212661-2</b>	<b>LCS</b>							
Bismuth (Bi)-Dissolved			102.6		%		80-120	06-NOV-19
Boron (B)-Dissolved			109.4		%		80-120	06-NOV-19
Cadmium (Cd)-Dissolved			97.8		%		80-120	06-NOV-19
Calcium (Ca)-Dissolved			103.3		%		80-120	06-NOV-19
Chromium (Cr)-Dissolved			98.0		%		80-120	06-NOV-19
Cobalt (Co)-Dissolved			98.4		%		80-120	06-NOV-19
Copper (Cu)-Dissolved			97.0		%		80-120	06-NOV-19
Iron (Fe)-Dissolved			96.6		%		80-120	06-NOV-19
Lead (Pb)-Dissolved			105.2		%		80-120	06-NOV-19
Lithium (Li)-Dissolved			105.8		%		80-120	06-NOV-19
Magnesium (Mg)-Dissolved			99.2		%		80-120	06-NOV-19
Manganese (Mn)-Dissolved			104.4		%		80-120	06-NOV-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	06-NOV-19
Nickel (Ni)-Dissolved			99.3		%		80-120	06-NOV-19
Potassium (K)-Dissolved			106.5		%		80-120	06-NOV-19
Selenium (Se)-Dissolved			99.0		%		80-120	06-NOV-19
Silicon (Si)-Dissolved			103.4		%		60-140	06-NOV-19
Silver (Ag)-Dissolved			102.2		%		80-120	06-NOV-19
Sodium (Na)-Dissolved			105.0		%		80-120	06-NOV-19
Strontium (Sr)-Dissolved			101.4		%		80-120	06-NOV-19
Thallium (Tl)-Dissolved			104.3		%		80-120	06-NOV-19
Tin (Sn)-Dissolved			98.9		%		80-120	06-NOV-19
Titanium (Ti)-Dissolved			98.2		%		80-120	06-NOV-19
Uranium (U)-Dissolved			107.5		%		80-120	06-NOV-19
Vanadium (V)-Dissolved			102.6		%		80-120	06-NOV-19
Zinc (Zn)-Dissolved			96.7		%		80-120	06-NOV-19
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	06-NOV-19



## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4901748</b>							
<b>WG3212661-1</b>	<b>MB</b>	<b>NP</b>						
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	06-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	06-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	06-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	06-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	06-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	06-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	06-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	06-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	06-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	06-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900036</b>							
<b>WG3211471-34</b>	<b>LCS</b>							
Ammonia as N			103.6		%		85-115	05-NOV-19
<b>WG3211471-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	05-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4900768</b>							
<b>WG3212150-2</b>	<b>LCS</b>							
Nitrite (as N)			99.1		%		90-110	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	05-NOV-19



## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-2</b>	<b>LCS</b>							
Nitrate (as N)			103.5		%		90-110	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	05-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4899282							
<b>WG3211279-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	05-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4901159							
<b>WG3212271-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.1		%		80-120	06-NOV-19
<b>WG3212271-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	06-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4898881							
<b>WG3211068-8</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	05-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4900090							
<b>WG3210690-4</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.5		%		80-120	05-NOV-19
<b>WG3210690-3</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	05-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4900768							
<b>WG3212150-2</b>	<b>LCS</b>							
Sulfate (SO4)			105.2		%		90-110	05-NOV-19
<b>WG3212150-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	05-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4902229							
<b>WG3211857-5</b>	<b>LCS</b>							
Total Dissolved Solids			100.3		%		85-115	06-NOV-19
<b>WG3211857-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4902229							
WG3211857-4	MB							
Total Dissolved Solids			<10		mg/L		10	06-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4900635							
WG3211987-2	LCS							
Total Kjeldahl Nitrogen			94.3		%		75-125	06-NOV-19
WG3211987-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	06-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4902443							
WG3212286-4	LCS							
Total Suspended Solids			91.3		%		85-115	06-NOV-19
WG3212286-3	MB							
Total Suspended Solids			<1.0		mg/L		1	06-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4899311							
WG3211483-5	LCS							
Turbidity			94.5		%		85-115	05-NOV-19
WG3211483-4	MB							
Turbidity			<0.10		NTU		0.1	05-NOV-19

# Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2376833

Report Date: 08-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	04-NOV-19 14:37	05-NOV-19 13:00	0.25	22	hours	EHTR-FM
pH	1	04-NOV-19 14:37	05-NOV-19 12:00	0.25	21	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2376833 were received on 05-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.


The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC\_WG\_Q4\_20191104** TURNAROUND TIME: **REGULAR** RUSH: **No**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	victoria.sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	scott.holmgren@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

**SAMPLE DETAILS** **ANALYSIS REQUESTED**

Sample ID	Sample Location (sys_loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	PRESERV.	ANALYSIS	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None					
										F	N	F	F	N	
 L2376833-COFC															
CM_MW4-SH_WG_2019-10-14_N	CM_MW4-SH	WG	No	2019/11/04	14:37	G	5	H2SO4	H2SO4	HCL	HNO3	NONE			
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please send metals to ALS Burnaby.			elleg	5 Nov 2019 7:00 AM
<b>SERVICE REQUEST (rush - subject to availability)</b>				
Regular (default) X	Sampler's Name	VS/SH	Mobile #	250 425 7522
Priority (2-3 business days) - 50% surcharge	Sampler's Signature		Date/Time	November 4, 2019 - 17:00
Emergency (1 Business Day) - 100% surcharge				
For Emergency <1 Day, ASAP or Weekend - Contact ALS				





TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 06-NOV-19  
Report Date: 13-NOV-19 17:47 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2378156  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191105  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2378156-1 CM_MW4-DP_WG_2019-10-14_N							
Sampled By: VS/SH on 05-NOV-19 @ 09:00							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		06-NOV-19	R4901982
Total Kjeldahl Nitrogen	0.614		0.050	mg/L		07-NOV-19	R4902341
Total Organic Carbon	<0.50		0.50	mg/L		06-NOV-19	R4901982
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.040	DLA	0.040	ug/L	08-NOV-19	09-NOV-19	R4903899
Dissolved Metals Filtration Location	FIELD					08-NOV-19	R4903072
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	12-NOV-19	13-NOV-19	R4905494
Dissolved Mercury Filtration Location	FIELD					12-NOV-19	R4905071
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					08-NOV-19	R4903072
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	08-NOV-19	09-NOV-19	R4903899
Antimony (Sb)-Dissolved	<0.00020	DLA	0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Arsenic (As)-Dissolved	<0.00020	DLA	0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Barium (Ba)-Dissolved	0.501		0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Bismuth (Bi)-Dissolved	<0.00010	DLA	0.00010	mg/L	08-NOV-19	09-NOV-19	R4903899
Boron (B)-Dissolved	0.420		0.020	mg/L	08-NOV-19	09-NOV-19	R4903899
Cadmium (Cd)-Dissolved	<0.010	DLA	0.010	ug/L	08-NOV-19	09-NOV-19	R4903899
Calcium (Ca)-Dissolved	7.78		0.10	mg/L	08-NOV-19	09-NOV-19	R4903899
Chromium (Cr)-Dissolved	<0.00020	DLA	0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Cobalt (Co)-Dissolved	<0.20	DLA	0.20	ug/L	08-NOV-19	09-NOV-19	R4903899
Copper (Cu)-Dissolved	<0.00040	DLA	0.00040	mg/L	08-NOV-19	09-NOV-19	R4903899
Iron (Fe)-Dissolved	<0.020	DLA	0.020	mg/L	08-NOV-19	09-NOV-19	R4903899
Lead (Pb)-Dissolved	<0.00010	DLA	0.00010	mg/L	08-NOV-19	09-NOV-19	R4903899
Lithium (Li)-Dissolved	1.06		0.0020	mg/L	08-NOV-19	09-NOV-19	R4903899
Magnesium (Mg)-Dissolved	2.17		0.10	mg/L	08-NOV-19	09-NOV-19	R4903899
Manganese (Mn)-Dissolved	0.00367		0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Molybdenum (Mo)-Dissolved	0.00046		0.00010	mg/L	08-NOV-19	09-NOV-19	R4903899
Nickel (Ni)-Dissolved	<0.0010	DLA	0.0010	mg/L	08-NOV-19	09-NOV-19	R4903899
Potassium (K)-Dissolved	1.31		0.10	mg/L	08-NOV-19	09-NOV-19	R4903899
Selenium (Se)-Dissolved	<0.10	DLA	0.10	ug/L	08-NOV-19	09-NOV-19	R4903899
Silicon (Si)-Dissolved	4.18		0.10	mg/L	08-NOV-19	09-NOV-19	R4903899
Silver (Ag)-Dissolved	<0.000020	DLA	0.000020	mg/L	08-NOV-19	09-NOV-19	R4903899
Sodium (Na)-Dissolved	757		0.10	mg/L	08-NOV-19	09-NOV-19	R4903899
Strontium (Sr)-Dissolved	1.10		0.00040	mg/L	08-NOV-19	09-NOV-19	R4903899
Thallium (Tl)-Dissolved	<0.000020	DLA	0.000020	mg/L	08-NOV-19	09-NOV-19	R4903899
Tin (Sn)-Dissolved	<0.00020	DLA	0.00020	mg/L	08-NOV-19	09-NOV-19	R4903899
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	08-NOV-19	09-NOV-19	R4903899
Uranium (U)-Dissolved	0.000025		0.000020	mg/L	08-NOV-19	09-NOV-19	R4903899
Vanadium (V)-Dissolved	<0.0010	DLA	0.0010	mg/L	08-NOV-19	09-NOV-19	R4903899
Zinc (Zn)-Dissolved	<0.0020	DLA	0.0020	mg/L	08-NOV-19	09-NOV-19	R4903899
<b>Hardness</b>							
Hardness (as CaCO3)	28.4		0.50	mg/L		09-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		06-NOV-19	R4902090
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	830		1.0	mg/L		06-NOV-19	R4902063
Alkalinity, Carbonate (as CaCO3)	21.6		1.0	mg/L		06-NOV-19	R4902063
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		06-NOV-19	R4902063

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2378156-1 CM_MW4-DP_WG_2019-10-14_N							
Sampled By: VS/SH on 05-NOV-19 @ 09:00							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	851		1.0	mg/L		06-NOV-19	R4902063
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.604	DLHC	0.050	mg/L		06-NOV-19	R4902578
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	1.93	DLHC	0.25	mg/L		06-NOV-19	R4902067
<b>Chloride in Water by IC</b>							
Chloride (Cl)	489	DLHC	2.5	mg/L		06-NOV-19	R4902067
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	2590		2.0	uS/cm		06-NOV-19	R4902063
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.50	DLHC	0.10	mg/L		06-NOV-19	R4902067
<b>Ion Balance Calculation</b>							
Ion Balance	108		-100	%		09-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	4.0			%		09-NOV-19	
Anion Sum	31.0			meq/L		09-NOV-19	
Cation Sum	33.6			meq/L		09-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.063	DLHC	0.025	mg/L		06-NOV-19	R4902067
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		06-NOV-19	R4902067
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0104		0.0010	mg/L		06-NOV-19	R4902106
<b>Oxidation reduction potential by elect.</b>							
ORP	504		-1000	mV		07-NOV-19	R4902857
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0135		0.0020	mg/L		07-NOV-19	R4902310
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	6.0	DLHC	1.5	mg/L		06-NOV-19	R4902067
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	1680	DLHC	20	mg/L		08-NOV-19	R4903862
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.3		1.0	mg/L		08-NOV-19	R4903811
<b>Turbidity</b>							
Turbidity	5.24		0.10	NTU		06-NOV-19	R4901308
<b>pH</b>							
pH	8.44		0.10	pH		06-NOV-19	R4902063

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
--------------	-------	-----------	--------------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
----	---

CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
----	--

**Chain of Custody Numbers:**

COC\_WG\_Q4\_20191105

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4902090							
<b>WG3213055-14</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.4		%		85-115	06-NOV-19
<b>WG3213055-13</b>	<b>MB</b>							
Acidity (as CaCO3)			1.6		mg/L		2	06-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4902063							
<b>WG3213072-17</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	06-NOV-19
<b>WG3213072-16</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	06-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4903899							
<b>WG3214422-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			103.9		%		80-120	09-NOV-19
<b>WG3214422-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	09-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4902067							
<b>WG3213188-10</b>	<b>LCS</b>							
Bromide (Br)			98.2		%		85-115	06-NOV-19
<b>WG3213188-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	06-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4901982							
<b>WG3213161-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.8		%		80-120	06-NOV-19
<b>WG3213161-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	06-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4901982							
<b>WG3213161-6</b>	<b>LCS</b>							
Total Organic Carbon			99.6		%		80-120	06-NOV-19
<b>WG3213161-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	06-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4902067							
<b>WG3213188-10</b>	<b>LCS</b>							
Chloride (Cl)			100.8		%		90-110	06-NOV-19
<b>WG3213188-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	06-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4902063							
<b>WG3213072-17</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.8		%		90-110	06-NOV-19
<b>WG3213072-16</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	06-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4902067							
<b>WG3213188-10</b>	<b>LCS</b>							
Fluoride (F)			105.9		%		90-110	06-NOV-19
<b>WG3213188-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	06-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4905494							
<b>WG3216781-10</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.2		%		80-120	13-NOV-19
<b>WG3216781-9</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	13-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4903899							
<b>WG3214422-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.6		%		80-120	09-NOV-19
Antimony (Sb)-Dissolved			103.1		%		80-120	09-NOV-19
Arsenic (As)-Dissolved			106.3		%		80-120	09-NOV-19
Barium (Ba)-Dissolved			107.2		%		80-120	09-NOV-19
Bismuth (Bi)-Dissolved			99.6		%		80-120	09-NOV-19
Boron (B)-Dissolved			103.3		%		80-120	09-NOV-19
Cadmium (Cd)-Dissolved			106.3		%		80-120	09-NOV-19
Calcium (Ca)-Dissolved			104.4		%		80-120	09-NOV-19
Chromium (Cr)-Dissolved			110.4		%		80-120	09-NOV-19
Cobalt (Co)-Dissolved			106.6		%		80-120	09-NOV-19
Copper (Cu)-Dissolved			103.7		%		80-120	09-NOV-19





## Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903899</b>							
<b>WG3214422-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			106.0		%		80-120	09-NOV-19
Lead (Pb)-Dissolved			102.5		%		80-120	09-NOV-19
Lithium (Li)-Dissolved			101.1		%		80-120	09-NOV-19
Magnesium (Mg)-Dissolved			109.8		%		80-120	09-NOV-19
Manganese (Mn)-Dissolved			107.3		%		80-120	09-NOV-19
Molybdenum (Mo)-Dissolved			105.1		%		80-120	09-NOV-19
Nickel (Ni)-Dissolved			106.9		%		80-120	09-NOV-19
Potassium (K)-Dissolved			105.2		%		80-120	09-NOV-19
Selenium (Se)-Dissolved			108.0		%		80-120	09-NOV-19
Silicon (Si)-Dissolved			106.4		%		60-140	09-NOV-19
Silver (Ag)-Dissolved			100.7		%		80-120	09-NOV-19
Sodium (Na)-Dissolved			109.9		%		80-120	09-NOV-19
Strontium (Sr)-Dissolved			104.2		%		80-120	09-NOV-19
Thallium (Tl)-Dissolved			99.9		%		80-120	09-NOV-19
Tin (Sn)-Dissolved			105.1		%		80-120	09-NOV-19
Titanium (Ti)-Dissolved			97.5		%		80-120	09-NOV-19
Uranium (U)-Dissolved			107.5		%		80-120	09-NOV-19
Vanadium (V)-Dissolved			109.3		%		80-120	09-NOV-19
Zinc (Zn)-Dissolved			104.4		%		80-120	09-NOV-19
<b>WG3214422-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	09-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	09-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	09-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	09-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	09-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	09-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	09-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	09-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	09-NOV-19



## Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903899</b>							
<b>WG3214422-1</b>	<b>MB</b>	<b>NP</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	09-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	09-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	09-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	09-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	09-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	09-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	09-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	09-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	09-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	09-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	09-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	09-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	09-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	09-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	09-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902578</b>							
<b>WG3212385-30</b>	<b>LCS</b>							
Ammonia as N			96.1		%		85-115	06-NOV-19
<b>WG3212385-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	06-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902067</b>							
<b>WG3213188-10</b>	<b>LCS</b>							
Nitrite (as N)			102.1		%		90-110	06-NOV-19
<b>WG3213188-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	06-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902067</b>							
<b>WG3213188-10</b>	<b>LCS</b>							
Nitrate (as N)			101.7		%		90-110	06-NOV-19
<b>WG3213188-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	06-NOV-19
<b>ORP-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4902341							
<b>WG3213164-17 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	07-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4903811							
<b>WG3214541-8 LCS</b>								
Total Suspended Solids			98.5		%		85-115	08-NOV-19
<b>WG3214541-7 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	08-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4901308							
<b>WG3212642-14 LCS</b>								
Turbidity			94.0		%		85-115	06-NOV-19
<b>WG3212642-13 MB</b>								
Turbidity			<0.10		NTU		0.1	06-NOV-19

# Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2378156

Report Date: 13-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	05-NOV-19 09:00	07-NOV-19 13:00	0.25	52	hours	EHTR-FM
pH	1	05-NOV-19 09:00	06-NOV-19 15:00	0.25	30	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).


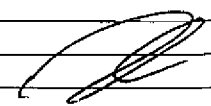
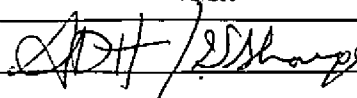
### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2378156 were received on 06-NOV-19 08:50.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> COC WG_Q4_20191105		<b>TURNAROUND TIME:</b> REGULAR				<b>RUSH:</b> No												
PROJECT/CLIENT INFO			LABORATORY			OTHER INFO												
Facility Name / Job# Coal Mountain Operations			Lab Name ALS Calgary		Report Format / Distribution		Excel PDF EDD											
Project Manager Jay Jones			Lab Contact Lyudmyla Shvets		Email 1: victoria.sharpe@teck.com	X	X											
Email Jay.Jones@teck.com			Email Lyudmyla.Shvets@alsglobal.com		Email 2: teckcoal@equisonline.com		X											
Address PO Box 3000			Address 2559 29th St. NE		Email 3: jay.jones@teck.com	X	X											
City Sparwood		Province BC	City Calgary		Province AB	Email 5: don.sacine@teck.com	X											
Postal Code V0B 2G0		Country Canada	Postal Code T1Y 7B5		Country Canada	Email 6: scott.holmgren@teck.com	X											
Phone Number 1-250-425-7321			Phone Number 403 407 1800		PO number 611069													
SAMPLE DETAILS					ANALYSIS REQUESTED													
 L2378156-COFC	Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	F	N	F	F	N					
									ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA					
	CM_MW4-DP_WG_2019-10-14_N	CM_MW4-DP	WG	No	2019/11/05	9:00	G	5	1	1	1	1	1					
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:									RELINQUISHED BY/AFFILIATION			DATE/TIME		ACCEPTED BY/AFFILIATION			DATE/TIME	
Please send metals to ALS Burnaby.																	11/06 8:50	
SERVICE REQUEST (rush subject to availability)									SAMPLER'S NAME			DATE/TIME		MOBILE #		SAMPLER'S SIGNATURE		
									VS/SH					250 425 7522		November 5, 2019 - 17:00		
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS									Sampler's Name 			Date/Time						

AC



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 07-NOV-19  
Report Date: 15-NOV-19 12:04 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2379284  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191106  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2379284-1 CM_MW6-DP_WG_2019-10-14_N							
Sampled By: VS/SH on 06-NOV-19 @ 11:50							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	1.24		0.50	mg/L		08-NOV-19	R4903700
Total Kjeldahl Nitrogen	0.434		0.050	mg/L		09-NOV-19	R4903830
Total Organic Carbon	1.12		0.50	mg/L		08-NOV-19	R4903700
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-NOV-19	13-NOV-19	R4905405
Dissolved Metals Filtration Location	FIELD					10-NOV-19	R4904078
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-NOV-19	15-NOV-19	R4908847
Dissolved Mercury Filtration Location	FIELD					14-NOV-19	R4908407
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					13-NOV-19	R4905671
Aluminum (Al)-Dissolved	0.0054		0.0030	mg/L	10-NOV-19	13-NOV-19	R4905405
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Arsenic (As)-Dissolved	0.00051		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Barium (Ba)-Dissolved	0.334		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Boron (B)-Dissolved	0.315		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-NOV-19	13-NOV-19	R4905405
Calcium (Ca)-Dissolved	10.5		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Chromium (Cr)-Dissolved	0.00012		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	10-NOV-19	13-NOV-19	R4905405
Copper (Cu)-Dissolved	0.00024		0.00020	mg/L	10-NOV-19	13-NOV-19	R4905405
Iron (Fe)-Dissolved	0.157		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Lithium (Li)-Dissolved	0.405		0.0010	mg/L	10-NOV-19	13-NOV-19	R4905405
Magnesium (Mg)-Dissolved	3.32		0.10	mg/L	10-NOV-19	13-NOV-19	R4905405
Manganese (Mn)-Dissolved	0.0471		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Molybdenum (Mo)-Dissolved	0.00342		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-NOV-19	13-NOV-19	R4905405
Potassium (K)-Dissolved	2.07		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Selenium (Se)-Dissolved	0.076		0.050	ug/L	10-NOV-19	13-NOV-19	R4905405
Silicon (Si)-Dissolved	4.28		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Sodium (Na)-Dissolved	312		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Strontium (Sr)-Dissolved	0.954		0.00020	mg/L	10-NOV-19	13-NOV-19	R4905405
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Tin (Sn)-Dissolved	0.00014		0.00010	mg/L	13-NOV-19	13-NOV-19	R4905910
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Uranium (U)-Dissolved	0.000766		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-NOV-19	13-NOV-19	R4905405
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-NOV-19	13-NOV-19	R4905405
<b>Hardness</b>							
Hardness (as CaCO3)	39.8		0.50	mg/L		14-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		08-NOV-19	R4903797
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	597		1.0	mg/L		08-NOV-19	R4903794
Alkalinity, Carbonate (as CaCO3)	25.0		1.0	mg/L		08-NOV-19	R4903794
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-NOV-19	R4903794

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2379284-1 CM_MW6-DP_WG_2019-10-14_N Sampled By: VS/SH on 06-NOV-19 @ 11:50 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	622		1.0	mg/L		08-NOV-19	R4903794
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.414		0.0050	mg/L		13-NOV-19	R4906413
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.128		0.050	mg/L		07-NOV-19	R4902981
<b>Chloride in Water by IC</b>							
Chloride (Cl)	37.5		0.50	mg/L		07-NOV-19	R4902981
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	1050		2.0	uS/cm		08-NOV-19	R4903794
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.507		0.020	mg/L		07-NOV-19	R4902981
<b>Ion Balance Calculation</b>							
Ion Balance	106		-100	%		14-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	2.8			%		14-NOV-19	
Anion Sum	13.7			meq/L		14-NOV-19	
Cation Sum	14.5			meq/L		14-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-NOV-19	R4902981
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-NOV-19	R4902981
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0089		0.0010	mg/L		08-NOV-19	R4903541
<b>Oxidation reduction potential by elect.</b>							
ORP	420		-1000	mV		08-NOV-19	R4903603
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0182		0.0020	mg/L		10-NOV-19	R4903905
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	8.22		0.30	mg/L		07-NOV-19	R4902981
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	756	DLHC	20	mg/L		12-NOV-19	R4905928
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.6		1.0	mg/L		12-NOV-19	R4905839
<b>Turbidity</b>							
Turbidity	3.21		0.10	NTU		08-NOV-19	R4903594
<b>pH</b>							
pH	8.47		0.10	pH		08-NOV-19	R4903794
L2379284-2 CM_MW6-SH_WG_2019-10-14_N Sampled By: VS/SH on 06-NOV-19 @ 12:20 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	2.44		0.50	mg/L		08-NOV-19	R4903700
Total Kjeldahl Nitrogen	0.079		0.050	mg/L		09-NOV-19	R4903830
Total Organic Carbon	2.44		0.50	mg/L		08-NOV-19	R4903700
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	10-NOV-19	13-NOV-19	R4905405
Dissolved Metals Filtration Location	FIELD					10-NOV-19	R4904078
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	14-NOV-19	15-NOV-19	R4908847
Dissolved Mercury Filtration Location	FIELD					14-NOV-19	R4908407
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2379284-2 CM_MW6-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 06-NOV-19 @ 12:20							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					10-NOV-19	R4904078
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	10-NOV-19	13-NOV-19	R4905405
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Arsenic (As)-Dissolved	0.00083		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Barium (Ba)-Dissolved	0.144		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Boron (B)-Dissolved	0.039		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	10-NOV-19	13-NOV-19	R4905405
Calcium (Ca)-Dissolved	19.6		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Cobalt (Co)-Dissolved	0.13		0.10	ug/L	10-NOV-19	13-NOV-19	R4905405
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	10-NOV-19	13-NOV-19	R4905405
Iron (Fe)-Dissolved	0.333		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Lithium (Li)-Dissolved	0.0427		0.0010	mg/L	10-NOV-19	13-NOV-19	R4905405
Magnesium (Mg)-Dissolved	7.30		0.10	mg/L	10-NOV-19	13-NOV-19	R4905405
Manganese (Mn)-Dissolved	0.250		0.00010	mg/L	10-NOV-19	13-NOV-19	R4905405
Molybdenum (Mo)-Dissolved	0.00653		0.000050	mg/L	10-NOV-19	13-NOV-19	R4905405
Nickel (Ni)-Dissolved	0.00125		0.00050	mg/L	10-NOV-19	13-NOV-19	R4905405
Potassium (K)-Dissolved	0.338		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	10-NOV-19	13-NOV-19	R4905405
Silicon (Si)-Dissolved	3.40		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Sodium (Na)-Dissolved	74.3		0.050	mg/L	10-NOV-19	13-NOV-19	R4905405
Strontium (Sr)-Dissolved	0.216		0.00020	mg/L	10-NOV-19	13-NOV-19	R4905405
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	10-NOV-19	13-NOV-19	R4905405
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	10-NOV-19	13-NOV-19	R4905405
Uranium (U)-Dissolved	0.000468		0.000010	mg/L	10-NOV-19	13-NOV-19	R4905405
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	10-NOV-19	13-NOV-19	R4905405
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-NOV-19	13-NOV-19	R4905405
<b>Hardness</b>							
Hardness (as CaCO3)	79.1		0.50	mg/L		13-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	<1.0		1.0	mg/L		08-NOV-19	R4903797
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	194		1.0	mg/L		08-NOV-19	R4903794
Alkalinity, Carbonate (as CaCO3)	8.0		1.0	mg/L		08-NOV-19	R4903794
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		08-NOV-19	R4903794
Alkalinity, Total (as CaCO3)	202		1.0	mg/L		08-NOV-19	R4903794
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0200		0.0050	mg/L		13-NOV-19	R4906413
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	0.127		0.050	mg/L		07-NOV-19	R4902981
<b>Chloride in Water by IC</b>							
Chloride (Cl)	19.1		0.50	mg/L		07-NOV-19	R4902981
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	385		2.0	uS/cm		08-NOV-19	R4903794
<b>Fluoride in Water by IC</b>							
Fluoride (F)	1.64		0.020	mg/L		07-NOV-19	R4902981
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2379284-2 CM_MW6-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 06-NOV-19 @ 12:20							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		13-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.6			%		13-NOV-19	
Anion Sum	4.79			meq/L		13-NOV-19	
Cation Sum	4.85			meq/L		13-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		07-NOV-19	R4902981
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		07-NOV-19	R4902981
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0012		0.0010	mg/L		08-NOV-19	R4903541
<b>Oxidation redution potential by elect.</b>							
ORP	282		-1000	mV		08-NOV-19	R4903603
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0058		0.0020	mg/L		10-NOV-19	R4903905
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	5.65		0.30	mg/L		07-NOV-19	R4902981
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	257	DLHC	20	mg/L		12-NOV-19	R4905928
<b>Total Suspended Solids</b>							
Total Suspended Solids	1.1		1.0	mg/L		12-NOV-19	R4905839
<b>Turbidity</b>							
Turbidity	2.19		0.10	NTU		08-NOV-19	R4903594
<b>pH</b>							
pH	8.38		0.10	pH		08-NOV-19	R4903794

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids	

# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

(TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
--------------	-------	-----------	--------------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

COC\_WG\_Q4\_20191106

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample  
 mg/kg wwt - milligrams per kilogram based on wet weight of sample  
 mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight  
 mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 1 of 11

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4903797							
<b>WG3215184-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.3		%		85-115	08-NOV-19
<b>WG3215184-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	08-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4903794							
<b>WG3215187-11</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			97.9		%		85-115	08-NOV-19
<b>WG3215187-10</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	08-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4905405							
<b>WG3215663-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.1		%		80-120	13-NOV-19
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	13-NOV-19
<b>WG3215663-4</b>	<b>MS</b>	<b>L2379284-1</b>						
Beryllium (Be)-Dissolved			96.8		%		70-130	13-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10</b>	<b>LCS</b>							
Bromide (Br)			100.2		%		85-115	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	07-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4903700							
<b>WG3215201-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.5		%		80-120	08-NOV-19
<b>WG3215201-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	08-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4903700							
<b>WG3215201-6</b>	<b>LCS</b>							
Total Organic Carbon			104.3		%		80-120	08-NOV-19
<b>WG3215201-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	08-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10 LCS</b>								
Chloride (Cl)			100.9		%		90-110	07-NOV-19
<b>WG3214358-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	07-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4903794							
<b>WG3215187-11 LCS</b>								
Conductivity (@ 25C)			96.2		%		90-110	08-NOV-19
<b>WG3215187-10 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	08-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10 LCS</b>								
Fluoride (F)			106.7		%		90-110	07-NOV-19
<b>WG3214358-9 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	07-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4908847							
<b>WG3219184-2 LCS</b>								
Mercury (Hg)-Dissolved			101.9		%		80-120	15-NOV-19
<b>WG3219184-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	15-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch	R4905405							
<b>WG3215663-2 LCS</b>								
Aluminum (Al)-Dissolved			94.5		%		80-120	13-NOV-19
Antimony (Sb)-Dissolved			92.2		%		80-120	13-NOV-19
Arsenic (As)-Dissolved			93.3		%		80-120	13-NOV-19
Barium (Ba)-Dissolved			96.9		%		80-120	13-NOV-19
Bismuth (Bi)-Dissolved			97.3		%		80-120	13-NOV-19
Boron (B)-Dissolved			94.9		%		80-120	13-NOV-19
Cadmium (Cd)-Dissolved			92.1		%		80-120	13-NOV-19
Calcium (Ca)-Dissolved			99.9		%		80-120	13-NOV-19
Chromium (Cr)-Dissolved			93.7		%		80-120	13-NOV-19
Cobalt (Co)-Dissolved			91.3		%		80-120	13-NOV-19
Copper (Cu)-Dissolved			91.6		%		80-120	13-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-2</b>	<b>LCS</b>							
Iron (Fe)-Dissolved			88.5		%		80-120	13-NOV-19
Lead (Pb)-Dissolved			99.0		%		80-120	13-NOV-19
Lithium (Li)-Dissolved			92.2		%		80-120	13-NOV-19
Magnesium (Mg)-Dissolved			92.0		%		80-120	13-NOV-19
Manganese (Mn)-Dissolved			96.6		%		80-120	13-NOV-19
Molybdenum (Mo)-Dissolved			95.2		%		80-120	13-NOV-19
Nickel (Ni)-Dissolved			90.9		%		80-120	13-NOV-19
Potassium (K)-Dissolved			93.7		%		80-120	13-NOV-19
Selenium (Se)-Dissolved			98.2		%		80-120	13-NOV-19
Silicon (Si)-Dissolved			101.1		%		60-140	13-NOV-19
Silver (Ag)-Dissolved			94.6		%		80-120	13-NOV-19
Sodium (Na)-Dissolved			96.3		%		80-120	13-NOV-19
Strontium (Sr)-Dissolved			93.4		%		80-120	13-NOV-19
Thallium (Tl)-Dissolved			96.1		%		80-120	13-NOV-19
Tin (Sn)-Dissolved			92.2		%		80-120	13-NOV-19
Titanium (Ti)-Dissolved			89.3		%		80-120	13-NOV-19
Uranium (U)-Dissolved			97.0		%		80-120	13-NOV-19
Vanadium (V)-Dissolved			95.1		%		80-120	13-NOV-19
Zinc (Zn)-Dissolved			88.3		%		80-120	13-NOV-19
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-1</b>	<b>MB</b>	<b>NP</b>						
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Tin (Sn)-Dissolved			0.00011	B	mg/L		0.0001	13-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
<b>WG3215663-4</b>	<b>MS</b>	<b>L2379284-1</b>						
Aluminum (Al)-Dissolved			98.7		%		70-130	13-NOV-19
Antimony (Sb)-Dissolved			96.3		%		70-130	13-NOV-19
Arsenic (As)-Dissolved			107.2		%		70-130	13-NOV-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Bismuth (Bi)-Dissolved			82.9		%		70-130	13-NOV-19
Boron (B)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Cadmium (Cd)-Dissolved			90.7		%		70-130	13-NOV-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Chromium (Cr)-Dissolved			93.7		%		70-130	13-NOV-19
Cobalt (Co)-Dissolved			93.1		%		70-130	13-NOV-19
Copper (Cu)-Dissolved			88.1		%		70-130	13-NOV-19
Iron (Fe)-Dissolved			90.8		%		70-130	13-NOV-19
Lead (Pb)-Dissolved			88.1		%		70-130	13-NOV-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Molybdenum (Mo)-Dissolved			100.8		%		70-130	13-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905405</b>							
<b>WG3215663-4</b>	<b>MS</b>	<b>L2379284-1</b>						
Nickel (Ni)-Dissolved			89.4		%		70-130	13-NOV-19
Potassium (K)-Dissolved			98.2		%		70-130	13-NOV-19
Selenium (Se)-Dissolved			117.2		%		70-130	13-NOV-19
Silicon (Si)-Dissolved			99.7		%		70-130	13-NOV-19
Silver (Ag)-Dissolved			73.3		%		70-130	13-NOV-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	13-NOV-19
Thallium (Tl)-Dissolved			85.0		%		70-130	13-NOV-19
Titanium (Ti)-Dissolved			96.4		%		70-130	13-NOV-19
Uranium (U)-Dissolved			87.7		%		70-130	13-NOV-19
Vanadium (V)-Dissolved			101.5		%		70-130	13-NOV-19
Zinc (Zn)-Dissolved			90.3		%		70-130	13-NOV-19
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.9		%		80-120	13-NOV-19
Antimony (Sb)-Dissolved			100.9		%		80-120	13-NOV-19
Arsenic (As)-Dissolved			100.1		%		80-120	13-NOV-19
Barium (Ba)-Dissolved			96.8		%		80-120	13-NOV-19
Bismuth (Bi)-Dissolved			101.5		%		80-120	13-NOV-19
Boron (B)-Dissolved			96.6		%		80-120	13-NOV-19
Cadmium (Cd)-Dissolved			99.9		%		80-120	13-NOV-19
Calcium (Ca)-Dissolved			96.9		%		80-120	13-NOV-19
Chromium (Cr)-Dissolved			99.8		%		80-120	13-NOV-19
Cobalt (Co)-Dissolved			100.8		%		80-120	13-NOV-19
Copper (Cu)-Dissolved			98.1		%		80-120	13-NOV-19
Iron (Fe)-Dissolved			95.9		%		80-120	13-NOV-19
Lead (Pb)-Dissolved			98.1		%		80-120	13-NOV-19
Lithium (Li)-Dissolved			96.5		%		80-120	13-NOV-19
Magnesium (Mg)-Dissolved			97.0		%		80-120	13-NOV-19
Manganese (Mn)-Dissolved			97.6		%		80-120	13-NOV-19
Molybdenum (Mo)-Dissolved			104.2		%		80-120	13-NOV-19
Nickel (Ni)-Dissolved			100.3		%		80-120	13-NOV-19
Potassium (K)-Dissolved			103.9		%		80-120	13-NOV-19
Selenium (Se)-Dissolved			98.0		%		80-120	13-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-2</b>	<b>LCS</b>							
Silicon (Si)-Dissolved			100.5		%		60-140	13-NOV-19
Silver (Ag)-Dissolved			101.0		%		80-120	13-NOV-19
Sodium (Na)-Dissolved			104.6		%		80-120	13-NOV-19
Strontium (Sr)-Dissolved			106.6		%		80-120	13-NOV-19
Thallium (Tl)-Dissolved			97.7		%		80-120	13-NOV-19
Tin (Sn)-Dissolved			99.9		%		80-120	13-NOV-19
Titanium (Ti)-Dissolved			102.7		%		80-120	13-NOV-19
Uranium (U)-Dissolved			100.8		%		80-120	13-NOV-19
Vanadium (V)-Dissolved			99.6		%		80-120	13-NOV-19
Zinc (Zn)-Dissolved			99.2		%		80-120	13-NOV-19
<b>WG3217491-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4905910</b>							
<b>WG3217491-1</b>	<b>MB</b>	<b>NP</b>						
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	13-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4906413</b>							
<b>WG3217773-42</b>	<b>LCS</b>							
Ammonia as N			93.4		%		85-115	13-NOV-19
<b>WG3217773-41</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	13-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902981</b>							
<b>WG3214358-10</b>	<b>LCS</b>							
Nitrite (as N)			102.0		%		90-110	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	07-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4902981</b>							
<b>WG3214358-10</b>	<b>LCS</b>							
Nitrate (as N)			101.3		%		90-110	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	07-NOV-19
<b>ORP-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903603</b>							
<b>WG3214902-9</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			211		mV		210-230	08-NOV-19
<b>P-T-L-COL-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4903905</b>							
<b>WG3215416-30</b>	<b>LCS</b>							
Phosphorus (P)-Total			101.9		%		80-120	10-NOV-19
<b>WG3215416-29</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	10-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-CL</b>	<b>Water</b>							
Batch	R4903794							
<b>WG3215187-11</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	08-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4903541							
<b>WG3214522-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			97.6		%		80-120	08-NOV-19
<b>WG3214522-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	08-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4902981							
<b>WG3214358-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	07-NOV-19
<b>WG3214358-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	07-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4905928							
<b>WG3216312-20</b>	<b>LCS</b>							
Total Dissolved Solids			98.9		%		85-115	12-NOV-19
<b>WG3216312-19</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	12-NOV-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4903830							
<b>WG3215247-30</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.4		%		75-125	09-NOV-19
<b>WG3215247-29</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	09-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4905839							
<b>WG3216494-10</b>	<b>LCS</b>							
Total Suspended Solids			94.6		%		85-115	12-NOV-19
<b>WG3216494-12</b>	<b>LCS</b>							
Total Suspended Solids			96.5		%		85-115	12-NOV-19
<b>WG3216494-11</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	12-NOV-19
<b>WG3216494-9</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	12-NOV-19



## Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4903594</b>							
<b>WG3214636-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	08-NOV-19
<b>WG3214636-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	08-NOV-19



# Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

---

# Quality Control Report

Workorder: L2379284

Report Date: 15-NOV-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	06-NOV-19 11:50	08-NOV-19 14:00	0.25	50	hours	EHTR-FM
	2	06-NOV-19 12:20	08-NOV-19 14:00	0.25	50	hours	EHTR-FM
pH	1	06-NOV-19 11:50	08-NOV-19 14:00	0.25	50	hours	EHTR-FM
	2	06-NOV-19 12:20	08-NOV-19 14:00	0.25	50	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2379284 were received on 07-NOV-19 09:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: <b>COC_WG_Q4_20191106</b>		TURNAROUND TIME: <b>REGULAR</b>			RUSH: <b>No</b>							
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	victoria.sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	don.sacino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	scott.holmgren@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F: Field, L: Lab, FL: Field & Lab, N: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA								
CM_MW6-DP_WG_2019-10-14_N	CM_MW6-DP	WG	No	2019/11/06	11:50	G	5													
CM_MW6-SH_WG_2019-10-14_N	CM_MW6-SH	WG	No	2019/11/06	12:20	G	5													

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please send metals to ALS Burnaby.			<i>B</i>	11/7/19

SERVICE REQUEST (rush - subject to availability)	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	VS/SH	Mobile #	250 425 7522	
Sampler's Signature	<i>S. Sharpe / A. H.</i>	Date/Time	November 6, 2019 - 17:00	



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 14-NOV-19  
Report Date: 20-NOV-19 16:10 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2382116  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191113  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382116-1 CM_MW5-DP_WG_2019-10-14_N							
Sampled By: VS/SH on 13-NOV-19 @ 12:37							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-NOV-19	R4909166
Total Kjeldahl Nitrogen	0.660		0.050	mg/L		15-NOV-19	R4909749
Total Organic Carbon	<0.50		0.50	mg/L		14-NOV-19	R4909166
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	0.00013		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	1.08		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.122		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	66.6		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086
Copper (Cu)-Dissolved	0.00023		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Iron (Fe)-Dissolved	1.20		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0610		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	24.2		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.0563		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.00158		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00126		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Potassium (K)-Dissolved	3.41		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	<0.050		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	6.55		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	58.6		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	1.94		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.000158		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0015		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	266		0.50	mg/L		19-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	14.2		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	381		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382116-1 CM_MW5-DP_WG_2019-10-14_N Sampled By: VS/SH on 13-NOV-19 @ 12:37 Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	381		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.607	DLHC	0.050	mg/L		20-NOV-19	R4917048
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	10.0		0.50	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	602		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.354		0.020	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							
Ion Balance	101		-100	%		19-NOV-19	
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	0.6			%		19-NOV-19	
Anion Sum	7.92			meq/L		19-NOV-19	
Cation Sum	8.02			meq/L		19-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	<0.0050		0.0050	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0010		0.0010	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation reduction potential by elect.</b>							
ORP	362		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0048		0.0020	mg/L		15-NOV-19	R4910187
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	0.41		0.30	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	433	DLHC	20	mg/L		16-NOV-19	R4913035
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.4		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	18.9		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.23		0.10	pH		15-NOV-19	R4906891
L2382116-2 CM_MW5-SH_WG_2019-10-14_N Sampled By: VS/SH on 13-NOV-19 @ 12:41 Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	<0.50		0.50	mg/L		14-NOV-19	R4909166
Total Kjeldahl Nitrogen	0.368		0.050	mg/L		15-NOV-19	R4909749
Total Organic Carbon	<0.50		0.50	mg/L		14-NOV-19	R4909166
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	17-NOV-19	17-NOV-19	R4916086
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382116-2 CM_MW5-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 13-NOV-19 @ 12:41							
Matrix: WG							
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					17-NOV-19	R4913032
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	17-NOV-19	17-NOV-19	R4916086
Antimony (Sb)-Dissolved	0.00038		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Arsenic (As)-Dissolved	0.00024		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Barium (Ba)-Dissolved	0.0700		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Boron (B)-Dissolved	0.042		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cadmium (Cd)-Dissolved	0.0449		0.0050	ug/L	17-NOV-19	17-NOV-19	R4916086
Calcium (Ca)-Dissolved	143		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Chromium (Cr)-Dissolved	0.00023		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Cobalt (Co)-Dissolved	<0.10		0.10	ug/L	17-NOV-19	17-NOV-19	R4916086
Copper (Cu)-Dissolved	0.00096		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Lithium (Li)-Dissolved	0.0306		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Magnesium (Mg)-Dissolved	64.5		0.10	mg/L	17-NOV-19	17-NOV-19	R4916086
Manganese (Mn)-Dissolved	0.00055		0.00010	mg/L	17-NOV-19	17-NOV-19	R4916086
Molybdenum (Mo)-Dissolved	0.00323		0.000050	mg/L	17-NOV-19	17-NOV-19	R4916086
Nickel (Ni)-Dissolved	0.00180		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Potassium (K)-Dissolved	2.39		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Selenium (Se)-Dissolved	10.0		0.050	ug/L	17-NOV-19	17-NOV-19	R4916086
Silicon (Si)-Dissolved	2.50		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Sodium (Na)-Dissolved	15.0		0.050	mg/L	17-NOV-19	17-NOV-19	R4916086
Strontium (Sr)-Dissolved	0.501		0.00020	mg/L	17-NOV-19	17-NOV-19	R4916086
Thallium (Tl)-Dissolved	0.000058		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Tin (Sn)-Dissolved	<0.00010		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
Titanium (Ti)-Dissolved	<0.0010		0.010	mg/L	17-NOV-19	17-NOV-19	R4916086
Uranium (U)-Dissolved	0.00458		0.000010	mg/L	17-NOV-19	17-NOV-19	R4916086
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	17-NOV-19	17-NOV-19	R4916086
Zinc (Zn)-Dissolved	0.0025		0.0010	mg/L	17-NOV-19	17-NOV-19	R4916086
<b>Hardness</b>							
Hardness (as CaCO3)	623		0.50	mg/L		19-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	16.2		1.0	mg/L		14-NOV-19	R4909572
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	254		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4906891
Alkalinity, Total (as CaCO3)	254		1.0	mg/L		15-NOV-19	R4906891
<b>Ammonia, Total (as N)</b>							
Ammonia as N	<0.0050		0.0050	mg/L		19-NOV-19	R4917048
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.25	DLHC	0.25	mg/L		14-NOV-19	R4909613
<b>Chloride in Water by IC</b>							
Chloride (Cl)	10.6	DLHC	2.5	mg/L		14-NOV-19	R4909613
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	984		2.0	uS/cm		15-NOV-19	R4906891
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.17	DLHC	0.10	mg/L		14-NOV-19	R4909613
<b>Ion Balance Calculation</b>							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382116-2 CM_MW5-SH_WG_2019-10-14_N							
Sampled By: VS/SH on 13-NOV-19 @ 12:41							
Matrix: WG							
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-6.0			%		19-NOV-19	
Anion Sum	14.8			meq/L		19-NOV-19	
Cation Sum	13.2			meq/L		19-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	88.7		-100	%		19-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	2.61	DLHC	0.025	mg/L		14-NOV-19	R4909613
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	<0.0050	DLHC	0.0050	mg/L		14-NOV-19	R4909613
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	0.0054	RRV	0.0010	mg/L		14-NOV-19	R4907408
<b>Oxidation redution potential by elect.</b>							
ORP	457		-1000	mV		14-NOV-19	R4908169
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	0.0040	RRV	0.0020	mg/L		15-NOV-19	R4910187
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	445	DLHC	1.5	mg/L		14-NOV-19	R4909613
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	886	DLHC	20	mg/L		16-NOV-19	R4913035
<b>Total Suspended Solids</b>							
Total Suspended Solids	<1.0		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	0.37		0.10	NTU		14-NOV-19	R4908127
<b>pH</b>							
pH	8.27		0.10	pH		15-NOV-19	R4906891

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.



## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions)			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
		should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
		Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
		This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.	
PH-CL	Water	pH	APHA 4500 H-Electrode
		pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)	
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
		A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).	
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
		Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.	
		Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:	
		Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]	
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
		This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.	
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.	

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

### Chain of Custody Numbers:

COC\_WG\_Q4\_20191113

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4909572							
<b>WG3219589-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	14-NOV-19
<b>WG3219589-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.4		mg/L		2	14-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4906891							
<b>WG3218717-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.0		%		85-115	14-NOV-19
<b>WG3218717-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4916086							
<b>WG3220713-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.4		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	17-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4909613							
<b>WG3219798-2</b>	<b>LCS</b>							
Bromide (Br)			96.9		%		85-115	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	14-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4909166							
<b>WG3219635-7</b>	<b>DUP</b>	<b>L2382116-1</b>						
Dissolved Organic Carbon		<0.50	<0.50	RPD-NA	mg/L	N/A	20	14-NOV-19
<b>WG3219635-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			100.9		%		80-120	14-NOV-19
<b>WG3219635-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
<b>WG3219635-8</b>	<b>MS</b>	<b>L2382116-2</b>						
Dissolved Organic Carbon			106.5		%		70-130	14-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4909166							
<b>WG3219635-6</b>	<b>LCS</b>							
Total Organic Carbon			104.2		%		80-120	14-NOV-19
<b>WG3219635-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch R4909166								
<b>WG3219635-5 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	14-NOV-19
<b>WG3219635-8 MS</b>		<b>L2382116-2</b>						
Total Organic Carbon			102.7		%		70-130	14-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch R4909613								
<b>WG3219798-2 LCS</b>								
Chloride (Cl)			101.6		%		90-110	14-NOV-19
<b>WG3219798-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	14-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch R4906891								
<b>WG3218717-5 LCS</b>								
Conductivity (@ 25C)			94.2		%		90-110	14-NOV-19
<b>WG3218717-4 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	14-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch R4909613								
<b>WG3219798-2 LCS</b>								
Fluoride (F)			105.3		%		90-110	14-NOV-19
<b>WG3219798-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	14-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch R4915679								
<b>WG3221215-2 LCS</b>								
Mercury (Hg)-Dissolved			96.9		%		80-120	19-NOV-19
<b>WG3221215-1 MB</b>								
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							
Batch R4916086								
<b>WG3220713-2 LCS</b>								
Aluminum (Al)-Dissolved			94.4		%		80-120	17-NOV-19
Antimony (Sb)-Dissolved			99.97		%		80-120	17-NOV-19
Arsenic (As)-Dissolved			94.7		%		80-120	17-NOV-19
Barium (Ba)-Dissolved			88.4		%		80-120	17-NOV-19
Bismuth (Bi)-Dissolved			98.9		%		80-120	17-NOV-19
Boron (B)-Dissolved			97.7		%		80-120	17-NOV-19



## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-2</b>	<b>LCS</b>							
Cadmium (Cd)-Dissolved			93.0		%		80-120	17-NOV-19
Calcium (Ca)-Dissolved			95.4		%		80-120	17-NOV-19
Chromium (Cr)-Dissolved			92.1		%		80-120	17-NOV-19
Cobalt (Co)-Dissolved			93.9		%		80-120	17-NOV-19
Copper (Cu)-Dissolved			92.3		%		80-120	17-NOV-19
Iron (Fe)-Dissolved			92.6		%		80-120	17-NOV-19
Lead (Pb)-Dissolved			98.0		%		80-120	17-NOV-19
Lithium (Li)-Dissolved			94.7		%		80-120	17-NOV-19
Magnesium (Mg)-Dissolved			93.4		%		80-120	17-NOV-19
Manganese (Mn)-Dissolved			90.1		%		80-120	17-NOV-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	17-NOV-19
Nickel (Ni)-Dissolved			92.1		%		80-120	17-NOV-19
Potassium (K)-Dissolved			96.3		%		80-120	17-NOV-19
Selenium (Se)-Dissolved			98.4		%		80-120	17-NOV-19
Silicon (Si)-Dissolved			103.1		%		60-140	17-NOV-19
Silver (Ag)-Dissolved			99.2		%		80-120	17-NOV-19
Sodium (Na)-Dissolved			97.6		%		80-120	17-NOV-19
Strontium (Sr)-Dissolved			102.7		%		80-120	17-NOV-19
Thallium (Tl)-Dissolved			103.5		%		80-120	17-NOV-19
Tin (Sn)-Dissolved			93.4		%		80-120	17-NOV-19
Titanium (Ti)-Dissolved			96.3		%		80-120	17-NOV-19
Uranium (U)-Dissolved			99.8		%		80-120	17-NOV-19
Vanadium (V)-Dissolved			95.4		%		80-120	17-NOV-19
Zinc (Zn)-Dissolved			87.6		%		80-120	17-NOV-19
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Cadmium (Cd)-Dissolved			<0.000005C		mg/L		0.000005	17-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19



## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4916086</b>							
<b>WG3220713-1</b>	<b>MB</b>	<b>NP</b>						
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	17-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	17-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	17-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	17-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	17-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	17-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	17-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	17-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	17-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	17-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4917048</b>							
<b>WG3222545-2</b>	<b>LCS</b>							
Ammonia as N			107.5		%		85-115	19-NOV-19
<b>WG3222545-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	19-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4909613</b>							
<b>WG3219798-2</b>	<b>LCS</b>							
Nitrite (as N)			98.1		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	14-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4909613							
<b>WG3219798-2</b>	<b>LCS</b>							
Nitrate (as N)			103.0		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	14-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4908169							
<b>WG3219158-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			214		mV		210-230	14-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4910187							
<b>WG3219686-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			95.6		%		80-120	15-NOV-19
<b>WG3219686-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	15-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4906891							
<b>WG3218717-5</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	14-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4907408							
<b>WG3218931-3</b>	<b>DUP</b>	<b>L2382116-2</b>						
Orthophosphate-Dissolved (as P)		0.0054	0.0055		mg/L	1.1	20	14-NOV-19
<b>WG3218931-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.6		%		80-120	14-NOV-19
<b>WG3218931-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	14-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4909613							
<b>WG3219798-2</b>	<b>LCS</b>							
Sulfate (SO4)			101.9		%		90-110	14-NOV-19
<b>WG3219798-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	14-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4913035							
<b>WG3220413-5</b>	<b>LCS</b>							
Total Dissolved Solids			101.3		%		85-115	16-NOV-19
<b>WG3220413-4</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	16-NOV-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4909749							
<b>WG3219638-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			92.1		%		75-125	15-NOV-19
<b>WG3219638-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	15-NOV-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4916100							
<b>WG3221140-8</b>	<b>LCS</b>							
Total Suspended Solids			98.1		%		85-115	18-NOV-19
<b>WG3221140-7</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4908127							
<b>WG3219135-2</b>	<b>LCS</b>							
Turbidity			94.5		%		85-115	14-NOV-19
<b>WG3219135-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	14-NOV-19

# Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 7 of 8

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2382116

Report Date: 20-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.							
	1	13-NOV-19 12:37	14-NOV-19 15:45	0.25	27	hours	EHTR-FM
	2	13-NOV-19 12:41	14-NOV-19 15:45	0.25	27	hours	EHTR-FM
pH							
	1	13-NOV-19 12:37	15-NOV-19 11:00	0.25	46	hours	EHTR-FM
	2	13-NOV-19 12:41	15-NOV-19 11:00	0.25	46	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2382116 were received on 14-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC WG\_Q4\_20191113**      TURNAROUND TIME: **REGULAR**      RUSH: **No**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	victoria.sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoal@enquisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	don.sarino@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	scott.holmgren@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

SAMPLE DETAILS								ANALYSIS REQUESTED					Filtered: F: Field, L: Lab, FL: Field & Lab, NE: None							
Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	F	N							
								ALS Package-DOC	H2SO4	H2SO4	HCL	HNO3	NONE							
CM_MW5-DP_WG_2019-10-14_N	CM_MW5-DP	WG	No	2019/11/13	12:37	G	5	ALS Package- TKN/TOC												
CM_MW5-SH_WG_2019-10-14_N	CM_MW5-SH	WG	No	2019/11/13	12:41	G	5	HG-D-CVAF-VA												
								TECKCOAL-MET-D-VA												
								TECKCOAL-ROUTINE-VA												

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please send metals to ALS Burnaby.			<i>DK 11/14 0900</i>	

SERVICE REQUEST (rush = subject to availability)	Sampler's Name	VS/SH	Mobile #
Regular (default) <input checked="" type="checkbox"/> X			250 425 7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>Victoria Sharpe</i>	Date/Time
			November 13, 2019 - 17:00

*60*



TECK COAL LIMITED (COAL MOUNTAIN)  
ATTN: Jay Jones  
PO BOX 3000 - 2261 Corbin Road  
SPARWOOD BC V0B 2G0

Date Received: 15-NOV-19  
Report Date: 21-NOV-19 10:43 (MT)  
Version: FINAL

Client Phone: 250-425-6111

## Certificate of Analysis

Lab Work Order #: L2382537  
Project P.O. #: VPO00611069  
Job Reference: COAL MOUNTAIN OPERATIONS  
C of C Numbers: COC\_WG\_Q4\_20191114  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382537-1 CM_MW10_WG_2019-10-14_N							
Sampled By: SH/MC on 14-NOV-19 @ 14:06							
Matrix: WG							
<b>Miscellaneous Parameters</b>							
Dissolved Organic Carbon	4.64		0.50	mg/L		15-NOV-19	R4912067
Total Kjeldahl Nitrogen	0.205		0.050	mg/L		16-NOV-19	R4912590
Total Organic Carbon	4.93		0.50	mg/L		15-NOV-19	R4912067
<b>Dissolved Metals in Water</b>							
<b>Diss. Be (low) in Water by CRC ICPMS</b>							
Beryllium (Be)-Dissolved	<0.020		0.020	ug/L	20-NOV-19	20-NOV-19	R4918528
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4916630
<b>Diss. Mercury in Water by CVAAS or CVAFS</b>							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	18-NOV-19	19-NOV-19	R4916198
Dissolved Mercury Filtration Location	FIELD					18-NOV-19	R4914411
<b>Dissolved Metals in Water by CRC ICPMS</b>							
Dissolved Metals Filtration Location	FIELD					20-NOV-19	R4916630
Aluminum (Al)-Dissolved	<0.0030		0.0030	mg/L	20-NOV-19	20-NOV-19	R4918528
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Arsenic (As)-Dissolved	0.00094		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Barium (Ba)-Dissolved	0.0770		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	20-NOV-19	20-NOV-19	R4918528
Boron (B)-Dissolved	0.027		0.010	mg/L	20-NOV-19	20-NOV-19	R4918528
Cadmium (Cd)-Dissolved	<0.0050		0.0050	ug/L	20-NOV-19	20-NOV-19	R4918528
Calcium (Ca)-Dissolved	74.1		0.050	mg/L	20-NOV-19	20-NOV-19	R4918528
Chromium (Cr)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Cobalt (Co)-Dissolved	0.65		0.10	ug/L	20-NOV-19	20-NOV-19	R4918528
Copper (Cu)-Dissolved	<0.00020		0.00020	mg/L	20-NOV-19	20-NOV-19	R4918528
Iron (Fe)-Dissolved	1.20		0.010	mg/L	20-NOV-19	20-NOV-19	R4918528
Lead (Pb)-Dissolved	0.000073		0.000050	mg/L	20-NOV-19	20-NOV-19	R4918528
Lithium (Li)-Dissolved	0.0129		0.0010	mg/L	20-NOV-19	20-NOV-19	R4918528
Magnesium (Mg)-Dissolved	24.5		0.10	mg/L	20-NOV-19	20-NOV-19	R4918528
Manganese (Mn)-Dissolved	0.176		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Molybdenum (Mo)-Dissolved	0.00517		0.000050	mg/L	20-NOV-19	20-NOV-19	R4918528
Nickel (Ni)-Dissolved	0.00070		0.00050	mg/L	20-NOV-19	20-NOV-19	R4918528
Potassium (K)-Dissolved	1.54		0.050	mg/L	20-NOV-19	20-NOV-19	R4918528
Selenium (Se)-Dissolved	1.38		0.050	ug/L	20-NOV-19	20-NOV-19	R4918528
Silicon (Si)-Dissolved	4.60		0.050	mg/L	20-NOV-19	20-NOV-19	R4918528
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	20-NOV-19	R4918528
Sodium (Na)-Dissolved	31.5		0.050	mg/L	20-NOV-19	20-NOV-19	R4918528
Strontium (Sr)-Dissolved	0.286		0.00020	mg/L	20-NOV-19	20-NOV-19	R4918528
Thallium (Tl)-Dissolved	<0.000010		0.000010	mg/L	20-NOV-19	20-NOV-19	R4918528
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	20-NOV-19	20-NOV-19	R4918528
Titanium (Ti)-Dissolved	<0.010		0.010	mg/L	20-NOV-19	20-NOV-19	R4918528
Uranium (U)-Dissolved	0.000268		0.000010	mg/L	20-NOV-19	20-NOV-19	R4918528
Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	20-NOV-19	20-NOV-19	R4918528
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	20-NOV-19	20-NOV-19	R4918528
<b>Hardness</b>							
Hardness (as CaCO3)	286		0.50	mg/L		20-NOV-19	
<b>Routine for Teck Coal</b>							
<b>Acidity by Automatic Titration</b>							
Acidity (as CaCO3)	7.3		1.0	mg/L		15-NOV-19	R4914627
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Bicarbonate (as CaCO3)	247		1.0	mg/L		15-NOV-19	R4914599
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4914599
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		15-NOV-19	R4914599

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2382537-1 CM_MW10_WG_2019-10-14_N							
Sampled By: SH/MC on 14-NOV-19 @ 14:06							
Matrix: WG							
<b>Alkalinity (Species) by Manual Titration</b>							
Alkalinity, Total (as CaCO3)	247		1.0	mg/L		15-NOV-19	R4914599
<b>Ammonia, Total (as N)</b>							
Ammonia as N	0.0901		0.0050	mg/L		16-NOV-19	R4912029
<b>Bromide in Water by IC (Low Level)</b>							
Bromide (Br)	<0.050		0.050	mg/L		15-NOV-19	R4915900
<b>Chloride in Water by IC</b>							
Chloride (Cl)	1.97		0.50	mg/L		15-NOV-19	R4915900
<b>Electrical Conductivity (EC)</b>							
Conductivity (@ 25C)	568		2.0	uS/cm		15-NOV-19	R4914599
<b>Fluoride in Water by IC</b>							
Fluoride (F)	0.891		0.020	mg/L		15-NOV-19	R4915900
<b>Ion Balance Calculation</b>							
Cation - Anion Balance	-0.6			%		20-NOV-19	
Anion Sum	7.28			meq/L		20-NOV-19	
Cation Sum	7.20			meq/L		20-NOV-19	
<b>Ion Balance Calculation</b>							
Ion Balance	98.8		-100	%		20-NOV-19	
<b>Nitrate in Water by IC (Low Level)</b>							
Nitrate (as N)	0.453		0.0050	mg/L		15-NOV-19	R4915900
<b>Nitrite in Water by IC (Low Level)</b>							
Nitrite (as N)	0.0361		0.0010	mg/L		15-NOV-19	R4915900
<b>Orthophosphate-Dissolved (as P)</b>							
Orthophosphate-Dissolved (as P)	<0.0010		0.0010	mg/L		15-NOV-19	R4910869
<b>Oxidation reduction potential by elect.</b>							
ORP	385		-1000	mV		15-NOV-19	R4911508
<b>Phosphorus (P)-Total</b>							
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		16-NOV-19	R4915232
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	106		0.30	mg/L		15-NOV-19	R4915900
<b>Total Dissolved Solids</b>							
Total Dissolved Solids	368	DLHC	20	mg/L		17-NOV-19	R4915195
<b>Total Suspended Solids</b>							
Total Suspended Solids	4.3		1.0	mg/L		18-NOV-19	R4916100
<b>Turbidity</b>							
Turbidity	18.3		0.10	NTU		15-NOV-19	R4911451
<b>pH</b>							
pH	8.02		0.10	pH		15-NOV-19	R4914599

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

## Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-PCT-CL	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-MAN-CL	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BR-L-IC-N-CL	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
C-DIS-ORG-LOW-CL	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
C-TOT-ORG-LOW-CL	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-N-CL	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-L-PCT-CL	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
F-IC-N-CL	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
IONBALANCE-BC-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			



## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-L-F-CL	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-CL	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-CL	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
ORP-CL	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
P-T-L-COL-CL	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-CL	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
PO4-DO-L-COL-CL	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
SO4-IC-N-CL	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-CL	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
TECKCOAL-IONBAL-CL	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
TKN-L-F-CL	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-L-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
TURBIDITY-CL	Water	Turbidity	APHA 2130 B-Nephelometer

# Reference Information

**Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

**Chain of Custody Numbers:**

COC\_WG\_Q4\_20191114

**GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample
- mg/kg wwt - milligrams per kilogram based on wet weight of sample
- mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
- mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 1 of 8

Client: TECK COAL LIMITED (COAL MOUNTAIN)  
 PO BOX 3000 - 2261 Corbin Road  
 SPARWOOD BC V0B 2G0

Contact: Jay Jones

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4914627							
<b>WG3221146-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			99.6		%		85-115	15-NOV-19
<b>WG3221146-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	15-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4914599							
<b>WG3221151-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.4		%		85-115	15-NOV-19
<b>WG3221151-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4918528							
<b>WG3223126-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.6		%		80-120	20-NOV-19
<b>WG3223126-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	20-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4915900							
<b>WG3222466-4</b>	<b>LCS</b>							
Bromide (Br)			97.9		%		85-115	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	15-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4912067							
<b>WG3220408-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.7		%		80-120	15-NOV-19
<b>WG3220408-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4912067							
<b>WG3220408-2</b>	<b>LCS</b>							
Total Organic Carbon			98.1		%		80-120	15-NOV-19
<b>WG3220408-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	15-NOV-19
<b>CL-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 2 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>CL-IC-N-CL</b>								
<b>Batch R4915900</b>								
<b>WG3222466-4</b>	<b>LCS</b>							
Chloride (Cl)			101.1		%		90-110	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	15-NOV-19
<b>EC-L-PCT-CL</b>								
<b>Batch R4914599</b>								
<b>WG3221151-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			94.2		%		90-110	15-NOV-19
<b>WG3221151-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	15-NOV-19
<b>F-IC-N-CL</b>								
<b>Batch R4915900</b>								
<b>WG3222466-4</b>	<b>LCS</b>							
Fluoride (F)			103.6		%		90-110	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	15-NOV-19
<b>HG-D-CVAA-VA</b>								
<b>Batch R4915679</b>								
<b>WG3221215-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			98.3		%		80-120	19-NOV-19
<b>WG3221215-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	19-NOV-19
<b>Batch R4916198</b>								
<b>WG3221215-8</b>	<b>MS</b>	<b>L2382537-1</b>						
Mercury (Hg)-Dissolved			94.3		%		70-130	19-NOV-19
<b>MET-D-CCMS-VA</b>								
<b>Batch R4918528</b>								
<b>WG3223126-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.2		%		80-120	20-NOV-19
Antimony (Sb)-Dissolved			93.4		%		80-120	20-NOV-19
Arsenic (As)-Dissolved			103.4		%		80-120	20-NOV-19
Barium (Ba)-Dissolved			101.4		%		80-120	20-NOV-19
Bismuth (Bi)-Dissolved			98.6		%		80-120	20-NOV-19
Boron (B)-Dissolved			99.2		%		80-120	20-NOV-19
Cadmium (Cd)-Dissolved			99.7		%		80-120	20-NOV-19
Calcium (Ca)-Dissolved			100.9		%		80-120	20-NOV-19



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 3 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4918528</b>							
<b>WG3223126-2</b>	<b>LCS</b>							
Chromium (Cr)-Dissolved			103.1		%		80-120	20-NOV-19
Cobalt (Co)-Dissolved			99.5		%		80-120	20-NOV-19
Copper (Cu)-Dissolved			99.1		%		80-120	20-NOV-19
Iron (Fe)-Dissolved			94.4		%		80-120	20-NOV-19
Lead (Pb)-Dissolved			99.3		%		80-120	20-NOV-19
Lithium (Li)-Dissolved			96.2		%		80-120	20-NOV-19
Magnesium (Mg)-Dissolved			98.8		%		80-120	20-NOV-19
Manganese (Mn)-Dissolved			99.6		%		80-120	20-NOV-19
Molybdenum (Mo)-Dissolved			95.5		%		80-120	20-NOV-19
Nickel (Ni)-Dissolved			101.0		%		80-120	20-NOV-19
Potassium (K)-Dissolved			101.5		%		80-120	20-NOV-19
Selenium (Se)-Dissolved			106.3		%		80-120	20-NOV-19
Silicon (Si)-Dissolved			104.7		%		60-140	20-NOV-19
Silver (Ag)-Dissolved			93.2		%		80-120	20-NOV-19
Sodium (Na)-Dissolved			107.1		%		80-120	20-NOV-19
Strontium (Sr)-Dissolved			95.5		%		80-120	20-NOV-19
Thallium (Tl)-Dissolved			98.2		%		80-120	20-NOV-19
Tin (Sn)-Dissolved			94.9		%		80-120	20-NOV-19
Titanium (Ti)-Dissolved			95.7		%		80-120	20-NOV-19
Uranium (U)-Dissolved			99.0		%		80-120	20-NOV-19
Vanadium (V)-Dissolved			103.7		%		80-120	20-NOV-19
Zinc (Zn)-Dissolved			97.8		%		80-120	20-NOV-19
<b>WG3223126-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	20-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-19



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 4 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4918528</b>							
<b>WG3223126-1</b>	<b>MB</b>	<b>NP</b>						
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	20-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	20-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	20-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	20-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	20-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	20-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	20-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4912029</b>							
<b>WG3219851-22</b>	<b>LCS</b>							
Ammonia as N			100.7		%		85-115	16-NOV-19
<b>WG3219851-21</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	16-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4915900</b>							
<b>WG3222466-4</b>	<b>LCS</b>							
Nitrite (as N)			96.5		%		90-110	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	15-NOV-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 5 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4915900							
<b>WG3222466-4</b>	<b>LCS</b>							
Nitrate (as N)			101.8		%		90-110	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	15-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4911508							
<b>WG3220205-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	15-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4915232							
<b>WG3221415-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			86.9		%		80-120	16-NOV-19
<b>WG3221415-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	16-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4914599							
<b>WG3221151-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	15-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4910869							
<b>WG3219963-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			98.9		%		80-120	15-NOV-19
<b>WG3219963-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	15-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4915900							
<b>WG3222466-4</b>	<b>LCS</b>							
Sulfate (SO4)			103.7		%		90-110	15-NOV-19
<b>WG3222466-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	15-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4915195							
<b>WG3220685-5</b>	<b>LCS</b>							
Total Dissolved Solids			102.5		%		85-115	17-NOV-19
<b>WG3220685-4</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 6 of 8

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4915195							
WG3220685-4	MB							
Total Dissolved Solids			<10		mg/L		10	17-NOV-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch	R4912590							
WG3220521-7	DUP	L2382537-1						
Total Kjeldahl Nitrogen		0.205	0.165	J	mg/L	0.040	0.1	16-NOV-19
WG3220521-6	LCS							
Total Kjeldahl Nitrogen			91.3		%		75-125	16-NOV-19
WG3220521-5	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	16-NOV-19
WG3220521-8	MS	L2382537-1						
Total Kjeldahl Nitrogen			118.1		%		70-130	16-NOV-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4916100							
WG3221140-10	LCS							
Total Suspended Solids			100.3		%		85-115	18-NOV-19
WG3221140-9	MB							
Total Suspended Solids			<1.0		mg/L		1	18-NOV-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4911451							
WG3220150-5	LCS							
Turbidity			94.5		%		85-115	15-NOV-19
WG3220150-4	MB							
Turbidity			<0.10		NTU		0.1	15-NOV-19



# Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 7 of 8

## Legend:

---

Limit ALS Control Limit (Data Quality Objectives)  
DUP Duplicate  
RPD Relative Percent Difference  
N/A Not Available  
LCS Laboratory Control Sample  
SRM Standard Reference Material  
MS Matrix Spike  
MSD Matrix Spike Duplicate  
ADE Average Desorption Efficiency  
MB Method Blank  
IRM Internal Reference Material  
CRM Certified Reference Material  
CCV Continuing Calibration Verification  
CVS Calibration Verification Standard  
LCSD Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2382537

Report Date: 21-NOV-19

Page 8 of 8

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	14-NOV-19 14:06	15-NOV-19 12:00	0.25	22	hours	EHTR-FM
pH	1	14-NOV-19 14:06	15-NOV-19 14:00	0.25	24	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2382537 were received on 15-NOV-19 09:05.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **COC\_WG\_Q4\_20191114**      TURNAROUND TIME: **REGULAR**

RUSH: **No**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Coal Mountain Operations			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDI	
Project Manager	Jay Jones			Lab Contact	Lyudmyla Shvets			Email 1:	victoria.sharpe@teck.com	X	X	X
Email	Jay.Jones@teck.com			Email	Lyudmyla.Shvets@alsglobal.com			Email 2:	teckcoast@equisonline.com			X
Address	PO Box 3000			Address	2559 29th St. NE			Email 3:	jay.jones@teck.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:	don.sacina@teck.com	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 6:	scott.holmgren@teck.com	X	X	X
Phone Number	1-250-425-7321			Phone Number	403 407 1800			PO number	611069			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered F: Field, L: Lab, P: Field & Lab, N: None



L2382537-COFC

Sample ID	Sample Location (sys loc code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-ROUTINE-VA	F	N	F	F	N	
CM_MW10_WG_2019-10-14_N	CM_MW10	WG	No	2019/11/14	14:00	G	5	1	1	1	1	1	1					

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Please send metals to ALS Burnaby.			<i>[Signature]</i>	11/15 09:05

SERVICE REQUEST (rush - subject to availability)	SAMPLER'S NAME	SH/MC	MOBILE #
Regular (default) X			250 425 7522
Priority (2-3 business days) - 50% surcharge			
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS	SAMPLER'S SIGNATURE	<i>[Signature]</i>	DATE/TIME
			November 14, 2019 - 17:00

537

7c



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 26-FEB-19  
Report Date: 05-MAR-19 17:31 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2236954  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECT PROGRAM  
C of C Numbers: 02-20\_2019-02-25  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236954-1 WP 25-FEB-19 13:26 RG_DW-02- 20_WP_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	462			
	Hardness (as CaCO3) (mg/L)	244			
	pH (pH)	7.98			
	ORP (mV)	419			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	378 <sup>DLHC</sup>			
	Turbidity (NTU)	2.22			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	172			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	172			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	2.58			
	Fluoride (F) (mg/L)	0.190			
	Ion Balance (%)	93.8			
	Nitrate (as N) (mg/L)	2.76			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.303			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0019			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	77.6			
	Anion Sum (meq/L)	5.33			
	Cation Sum (meq/L)	5.00			
	Cation - Anion Balance (%)	-3.2			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50		
Total Organic Carbon (mg/L)		<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.0893			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0077			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236954-1 WP 25-FEB-19 13:26 RG_DW-02- 20_WP_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	62.9			
	Chromium (Cr)-Total (mg/L)	0.00026			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00140			
	Iron (Fe)-Total (mg/L)	0.176			
	Lead (Pb)-Total (mg/L)	0.000051			
	Lithium (Li)-Total (mg/L)	0.0061			
	Magnesium (Mg)-Total (mg/L)	20.5			
	Manganese (Mn)-Total (mg/L)	0.00219			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00115			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.565			
	Selenium (Se)-Total (ug/L)	12.9			
	Silicon (Si)-Total (mg/L)	2.24			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.51			
	Strontium (Sr)-Total (mg/L)	0.246			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00105			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0034			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0800			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0070			
	Calcium (Ca)-Dissolved (mg/L)	66.9			
	Chromium (Cr)-Dissolved (mg/L)	0.00017			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236954-1 WP 25-FEB-19 13:26 RG_DW-02- 20_WP_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00114			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0068			
	Magnesium (Mg)-Dissolved (mg/L)	18.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00061			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00101			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.520			
	Selenium (Se)-Dissolved (ug/L)	12.4			
	Silicon (Si)-Dissolved (mg/L)	2.11			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.40			
	Strontium (Sr)-Dissolved (mg/L)	0.220			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000998			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0055			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2236954-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2236954-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2236954-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2236954-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2236954-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2236954-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2236954-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2236954-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2236954-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2236954-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2236954-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2236954-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2236954-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2236954-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2236954-1
Matrix Spike	Ammonia as N	MS-B	L2236954-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon			



## Reference Information

and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

02-20\_2019-02-25

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

< - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4534671							
<b>WG2997321-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.3		%		85-115	28-FEB-19
<b>WG2997321-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	28-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	28-FEB-19
<b>WG2997315-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4532289							
<b>WG2996675-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.9		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-FEB-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4533587							
<b>WG2996609-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			90.9		%		80-120	27-FEB-19
<b>WG2996609-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.0		%		80-120	04-MAR-19
<b>WG3000116-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2</b>	<b>LCS</b>							
Total Organic Carbon			99.7		%		80-120	04-MAR-19
<b>WG3000116-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.5		%		90-110	28-FEB-19
<b>WG2997315-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Fluoride (F)			101.6		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-FEB-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4533650							
<b>WG2997277-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.8		%		80-120	28-FEB-19
<b>WG2997277-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-FEB-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4538727							
<b>WG2998709-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.2		%		80-120	02-MAR-19
<b>WG2998709-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			91.5		%		80-120	27-FEB-19
Antimony (Sb)-Dissolved			90.8		%		80-120	27-FEB-19
Arsenic (As)-Dissolved			92.0		%		80-120	27-FEB-19
Barium (Ba)-Dissolved			91.1		%		80-120	27-FEB-19
Bismuth (Bi)-Dissolved			93.3		%		80-120	27-FEB-19
Boron (B)-Dissolved			90.2		%		80-120	27-FEB-19
Cadmium (Cd)-Dissolved			91.3		%		80-120	27-FEB-19
Calcium (Ca)-Dissolved			95.5		%		80-120	27-FEB-19
Chromium (Cr)-Dissolved			95.1		%		80-120	27-FEB-19
Cobalt (Co)-Dissolved			90.1		%		80-120	27-FEB-19
Copper (Cu)-Dissolved			91.9		%		80-120	27-FEB-19
Iron (Fe)-Dissolved			93.2		%		80-120	27-FEB-19
Lead (Pb)-Dissolved			97.0		%		80-120	27-FEB-19
Lithium (Li)-Dissolved			94.5		%		80-120	27-FEB-19
Magnesium (Mg)-Dissolved			89.3		%		80-120	27-FEB-19
Manganese (Mn)-Dissolved			91.9		%		80-120	27-FEB-19
Molybdenum (Mo)-Dissolved			97.7		%		80-120	27-FEB-19
Nickel (Ni)-Dissolved			89.9		%		80-120	27-FEB-19
Potassium (K)-Dissolved			90.6		%		80-120	27-FEB-19
Selenium (Se)-Dissolved			96.1		%		80-120	27-FEB-19
Silicon (Si)-Dissolved			97.1		%		60-140	27-FEB-19
Silver (Ag)-Dissolved			90.7		%		80-120	27-FEB-19
Sodium (Na)-Dissolved			93.4		%		80-120	27-FEB-19
Strontium (Sr)-Dissolved			92.7		%		80-120	27-FEB-19
Thallium (Tl)-Dissolved			94.9		%		80-120	27-FEB-19
Tin (Sn)-Dissolved			93.2		%		80-120	27-FEB-19
Titanium (Ti)-Dissolved			86.9		%		80-120	27-FEB-19
Uranium (U)-Dissolved			97.8		%		80-120	27-FEB-19
Vanadium (V)-Dissolved			93.5		%		80-120	27-FEB-19
Zinc (Zn)-Dissolved			93.8		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.2		%		80-120	27-FEB-19
Antimony (Sb)-Total			100.8		%		80-120	27-FEB-19
Arsenic (As)-Total			97.6		%		80-120	27-FEB-19
Barium (Ba)-Total			95.5		%		80-120	27-FEB-19



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-2 LCS</b>								
Bismuth (Bi)-Total			94.0		%		80-120	27-FEB-19
Boron (B)-Total			92.2		%		80-120	27-FEB-19
Cadmium (Cd)-Total			95.8		%		80-120	27-FEB-19
Calcium (Ca)-Total			94.1		%		80-120	27-FEB-19
Chromium (Cr)-Total			96.0		%		80-120	27-FEB-19
Cobalt (Co)-Total			94.9		%		80-120	27-FEB-19
Copper (Cu)-Total			94.9		%		80-120	27-FEB-19
Iron (Fe)-Total			93.5		%		80-120	27-FEB-19
Lead (Pb)-Total			92.9		%		80-120	27-FEB-19
Lithium (Li)-Total			90.5		%		80-120	27-FEB-19
Magnesium (Mg)-Total			102.1		%		80-120	27-FEB-19
Manganese (Mn)-Total			95.8		%		80-120	27-FEB-19
Molybdenum (Mo)-Total			99.97		%		80-120	27-FEB-19
Nickel (Ni)-Total			95.1		%		80-120	27-FEB-19
Potassium (K)-Total			98.2		%		80-120	27-FEB-19
Selenium (Se)-Total			96.3		%		80-120	27-FEB-19
Silicon (Si)-Total			96.3		%		80-120	27-FEB-19
Silver (Ag)-Total			91.7		%		80-120	27-FEB-19
Sodium (Na)-Total			101.4		%		80-120	27-FEB-19
Strontium (Sr)-Total			101.4		%		80-120	27-FEB-19
Thallium (Tl)-Total			92.4		%		80-120	27-FEB-19
Tin (Sn)-Total			96.7		%		80-120	27-FEB-19
Titanium (Ti)-Total			95.8		%		80-120	27-FEB-19
Uranium (U)-Total			92.7		%		80-120	27-FEB-19
Vanadium (V)-Total			97.8		%		80-120	27-FEB-19
Zinc (Zn)-Total			98.1		%		80-120	27-FEB-19
<b>WG2996609-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	27-FEB-19



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-FEB-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-FEB-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-FEB-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4539670</b>							
<b>WG2999150-2</b>	<b>LCS</b>							
Ammonia as N			97.4		%		85-115	01-MAR-19
<b>WG2999150-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	01-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4530188</b>							
<b>WG2996370-6</b>	<b>LCS</b>							
Nitrite (as N)			102.1		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-FEB-19





## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Nitrate (as N)			100.4		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-FEB-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4531948							
<b>WG2996795-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	27-FEB-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4534092							
<b>WG2997425-4</b>	<b>LCS</b>							
Phosphorus (P)-Total			96.9		%		80-120	28-FEB-19
<b>WG2997425-3</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-FEB-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-FEB-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4528108							
<b>WG2995602-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.0		%		80-120	26-FEB-19
<b>WG2995602-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-FEB-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Sulfate (SO4)			99.3		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-FEB-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4538554							
<b>WG2997906-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.1		%		85-115	01-MAR-19
<b>WG2997906-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R4538554								
WG2997906-1 MB								
Total Dissolved Solids			<10		mg/L		10	01-MAR-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R4537608								
WG2997243-2 LCS								
Total Kjeldahl Nitrogen			86.3		%		75-125	01-MAR-19
WG2997243-6 LCS								
Total Kjeldahl Nitrogen			86.9		%		75-125	01-MAR-19
WG2997243-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
WG2997243-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch R4538548								
WG2998301-4 LCS								
Total Suspended Solids			113.8		%		85-115	01-MAR-19
WG2998301-3 MB								
Total Suspended Solids			<1.0		mg/L		1	01-MAR-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch R4529047								
WG2995952-5 LCS								
Turbidity			96.5		%		85-115	26-FEB-19
WG2995952-4 MB								
Turbidity			<0.10		NTU		0.1	26-FEB-19

# Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2236954

Report Date: 05-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	25-FEB-19 13:26	27-FEB-19 11:15	0.25	46	hours	EHTR-FM
pH	1	25-FEB-19 13:26	05-MAR-19 15:00	0.25	194	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2236954 were received on 26-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COCID: **02-20 2019-02-25**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**



L2236954-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.
RG_DW-02-20_WP_Q1-2019_NP	RG_DW-02-20	WP	N	25-Feb-19	<del>0:00</del> 13:26	G	7

**ANALYSIS REQUESTED**

PREP	F	N	F	N	F	N	N						
H2SO4	H2SO4	HCL	HCL	HNO3	HNO3								
ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-F-VA	TECKCOAL-ROUTINE-VA							
1	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Jennifer de Werk</i>	2/26 9:00

SERVICE REQUEST (rush - subject to availability)		Sampler's Name	Mobile #
Regular (default)	X	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge		<i>Jaw</i>	Feb 25, 2019
Emergency (1 Business Day) - 100% surcharge			
For Emergency <1 Day, ASAP or Weekend - Contact ALS			



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 27-FEB-19  
Report Date: 06-MAR-19 17:30 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2237655  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-01\_2019-02-26  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2237655-1 WP 26-FEB-19 15:12 RG_DW-03-01_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	784			
	Hardness (as CaCO3) (mg/L)	413			
	pH (pH)	7.58			
	ORP (mV)	373			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	485			
	Turbidity (NTU)	1.92			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	14.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	348			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	348			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	0.173			
	Chloride (Cl) (mg/L)	39.2			
	Fluoride (F) (mg/L)	0.175			
	Ion Balance (%)	97.1			
	Nitrate (as N) (mg/L)	0.161			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.079			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	53.7			
	Anion Sum (meq/L)	9.20			
	Cation Sum (meq/L)	8.94			
	Cation - Anion Balance (%)	-1.5			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	2.19			
	Total Organic Carbon (mg/L)	1.85			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00013			
	Barium (Ba)-Total (mg/L)	0.109			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.036			
	Cadmium (Cd)-Total (ug/L)	0.0749			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2237655-1 WP 26-FEB-19 15:12 RG_DW-03-01_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	105			
	Chromium (Cr)-Total (mg/L)	<0.00010			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	0.199			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0192			
	Magnesium (Mg)-Total (mg/L)	31.8			
	Manganese (Mn)-Total (mg/L)	0.133			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00290			
	Nickel (Ni)-Total (mg/L)	0.00231			
	Potassium (K)-Total (mg/L)	1.92			
	Selenium (Se)-Total (ug/L)	0.212			
	Silicon (Si)-Total (mg/L)	4.44			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	13.4			
	Strontium (Sr)-Total (mg/L)	0.380			
	Thallium (Tl)-Total (mg/L)	0.000099			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000903			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.124			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.034			
	Cadmium (Cd)-Dissolved (ug/L)	0.0787			
	Calcium (Ca)-Dissolved (mg/L)	107			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2237655-1 WP 26-FEB-19 15:12 RG_DW-03-01_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	0.041			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0197			
	Magnesium (Mg)-Dissolved (mg/L)	35.3			
	Manganese (Mn)-Dissolved (mg/L)	0.137			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00307			
	Nickel (Ni)-Dissolved (mg/L)	0.00237			
	Potassium (K)-Dissolved (mg/L)	2.13			
	Selenium (Se)-Dissolved (ug/L)	0.227			
	Silicon (Si)-Dissolved (mg/L)	4.69			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	14.5			
	Strontium (Sr)-Dissolved (mg/L)	0.408			
	Thallium (Tl)-Dissolved (mg/L)	0.000106			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000947			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0013			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2237655-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2237655-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2237655-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2237655-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2237655-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2237655-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2237655-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			

## Reference Information

<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

03-01\_2019-02-26

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4537728							
<b>WG2998244-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.4		%		85-115	01-MAR-19
<b>WG2998244-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.5		mg/L		2	01-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	01-MAR-19
<b>WG2998047-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4541132							
<b>WG2997903-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			98.1		%		80-120	03-MAR-19
<b>WG2997903-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4534388							
<b>WG2997599-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.6		%		80-120	28-FEB-19
<b>WG2997599-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4545187							
<b>WG3000775-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.6		%		80-120	05-MAR-19
<b>WG3000775-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4545187							
<b>WG3000775-2</b>	<b>LCS</b>							
Total Organic Carbon			98.9		%		80-120	05-MAR-19
<b>WG3000775-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Chloride (Cl)			100.3		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100147.50		uS/cm			01-MAR-19
<b>WG2998047-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Fluoride (F)			102.4		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-FEB-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4536479							
<b>WG2998098-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-MAR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4540510							
<b>WG2999381-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.0		%		80-120	04-MAR-19
<b>WG2999381-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4541132</b>							
<b>WG2997903-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			103.0		%		80-120	03-MAR-19
Antimony (Sb)-Dissolved			96.5		%		80-120	03-MAR-19
Arsenic (As)-Dissolved			98.1		%		80-120	03-MAR-19
Barium (Ba)-Dissolved			101.0		%		80-120	03-MAR-19
Bismuth (Bi)-Dissolved			96.5		%		80-120	03-MAR-19
Boron (B)-Dissolved			95.4		%		80-120	03-MAR-19
Cadmium (Cd)-Dissolved			98.3		%		80-120	03-MAR-19
Calcium (Ca)-Dissolved			97.6		%		80-120	03-MAR-19
Chromium (Cr)-Dissolved			101.3		%		80-120	03-MAR-19
Cobalt (Co)-Dissolved			97.5		%		80-120	03-MAR-19
Copper (Cu)-Dissolved			95.9		%		80-120	03-MAR-19
Iron (Fe)-Dissolved			99.6		%		80-120	03-MAR-19
Lead (Pb)-Dissolved			98.6		%		80-120	03-MAR-19
Lithium (Li)-Dissolved			96.6		%		80-120	03-MAR-19
Magnesium (Mg)-Dissolved			102.1		%		80-120	03-MAR-19
Manganese (Mn)-Dissolved			100.0		%		80-120	03-MAR-19
Molybdenum (Mo)-Dissolved			102.9		%		80-120	03-MAR-19
Nickel (Ni)-Dissolved			95.2		%		80-120	03-MAR-19
Potassium (K)-Dissolved			105.4		%		80-120	03-MAR-19
Selenium (Se)-Dissolved			96.2		%		80-120	03-MAR-19
Silicon (Si)-Dissolved			101.8		%		60-140	03-MAR-19
Silver (Ag)-Dissolved			94.4		%		80-120	03-MAR-19
Sodium (Na)-Dissolved			102.2		%		80-120	03-MAR-19
Strontium (Sr)-Dissolved			96.0		%		80-120	03-MAR-19
Thallium (Tl)-Dissolved			98.3		%		80-120	03-MAR-19
Tin (Sn)-Dissolved			97.9		%		80-120	03-MAR-19
Titanium (Ti)-Dissolved			99.3		%		80-120	03-MAR-19
Uranium (U)-Dissolved			97.6		%		80-120	03-MAR-19
Vanadium (V)-Dissolved			100.2		%		80-120	03-MAR-19
Zinc (Zn)-Dissolved			95.0		%		80-120	03-MAR-19
<b>WG2997903-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19



## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4541132</b>							
<b>WG2997903-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4534388</b>							
<b>WG2997599-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.7		%		80-120	28-FEB-19
Antimony (Sb)-Total			99.8		%		80-120	28-FEB-19
Arsenic (As)-Total			98.7		%		80-120	28-FEB-19
Barium (Ba)-Total			99.0		%		80-120	28-FEB-19





## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4534388</b>							
<b>WG2997599-2 LCS</b>								
Bismuth (Bi)-Total			86.0		%		80-120	28-FEB-19
Boron (B)-Total			95.0		%		80-120	28-FEB-19
Cadmium (Cd)-Total			99.0		%		80-120	28-FEB-19
Calcium (Ca)-Total			93.9		%		80-120	28-FEB-19
Chromium (Cr)-Total			98.3		%		80-120	28-FEB-19
Cobalt (Co)-Total			98.8		%		80-120	28-FEB-19
Copper (Cu)-Total			97.7		%		80-120	28-FEB-19
Iron (Fe)-Total			98.1		%		80-120	28-FEB-19
Lead (Pb)-Total			89.3		%		80-120	28-FEB-19
Lithium (Li)-Total			93.5		%		80-120	28-FEB-19
Magnesium (Mg)-Total			95.8		%		80-120	28-FEB-19
Manganese (Mn)-Total			99.6		%		80-120	28-FEB-19
Molybdenum (Mo)-Total			100.6		%		80-120	28-FEB-19
Nickel (Ni)-Total			96.6		%		80-120	28-FEB-19
Potassium (K)-Total			97.4		%		80-120	28-FEB-19
Selenium (Se)-Total			98.1		%		80-120	28-FEB-19
Silicon (Si)-Total			91.6		%		80-120	28-FEB-19
Silver (Ag)-Total			93.8		%		80-120	28-FEB-19
Sodium (Na)-Total			97.0		%		80-120	28-FEB-19
Strontium (Sr)-Total			98.5		%		80-120	28-FEB-19
Thallium (Tl)-Total			86.2		%		80-120	28-FEB-19
Tin (Sn)-Total			96.9		%		80-120	28-FEB-19
Titanium (Ti)-Total			99.5		%		80-120	28-FEB-19
Uranium (U)-Total			87.3		%		80-120	28-FEB-19
Vanadium (V)-Total			98.8		%		80-120	28-FEB-19
Zinc (Zn)-Total			95.1		%		80-120	28-FEB-19
<b>WG2997599-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	28-FEB-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	28-FEB-19



## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch R4534388</b>								
<b>WG2997599-1 MB</b>								
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-FEB-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-FEB-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-FEB-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-FEB-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-FEB-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-FEB-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-FEB-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-FEB-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-FEB-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-FEB-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-FEB-19
<b>Batch R4541507</b>								
<b>WG2997599-1 MB</b>								
Silver (Ag)-Total			<0.000010		mg/L		0.00001	02-MAR-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch R4543991</b>								
<b>WG2999926-6 LCS</b>								
Ammonia as N			105.8		%		85-115	04-MAR-19
<b>WG2999926-5 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-13 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4546887							
<b>WG3000414-2 LCS</b>								
Total Dissolved Solids			100.5		%		85-115	05-MAR-19
<b>WG3000414-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	05-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4545949							
<b>WG2998092-2 LCS</b>								
Total Kjeldahl Nitrogen			101.9		%		75-125	05-MAR-19
<b>WG2998092-6 LCS</b>								
Total Kjeldahl Nitrogen			96.0		%		75-125	05-MAR-19
<b>WG2998092-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>WG2998092-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4546947							
<b>WG2999860-6 LCS</b>								
Total Suspended Solids			99.5		%		85-115	05-MAR-19
<b>WG2999860-5 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	05-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4534769							
<b>WG2997568-5 LCS</b>								
Turbidity			96.5		%		85-115	28-FEB-19
<b>WG2997568-4 MB</b>								
Turbidity			<0.10		NTU		0.1	28-FEB-19

# Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2237655

Report Date: 06-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	26-FEB-19 15:12	04-MAR-19 12:00	0.25	141	hours	EHTR-FM
pH	1	26-FEB-19 15:12	01-MAR-19 09:00	0.25	66	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2237655 were received on 27-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID:	03-01_2019-02-26			TURNAROUND TIME:		RUSH:						
PROJECT/CLIENT INFO				LABORATORY			OTHER INFO					
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Aliie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS								ANALYSIS REQUESTED							Filtered: F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CYAF-VA	HG-T-CYAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
RG_DW-03-01_WP_Q1-2019_NP	RG_DW-03-01	WP	N	26-Feb-19	9:00 15:12	G	7	1	1	1	1	1	1	1				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			DIC	2019/02/27

SERVICE REQUEST (rush - subject to availability)	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Ryan Schopman	Mobile #	250-910-7287
					Sampler's Signature	[Signature]	Date/Time	2019-02-26



L2237655-COFC

653

50C



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 27-FEB-19  
Report Date: 06-MAR-19 19:18 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2237657  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-04\_2019-02-26  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2237657-1 WP 26-FEB-19  RG_DW-03-04_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	618			
	Hardness (as CaCO3) (mg/L)	301			
	pH (pH)	8.11			
	ORP (mV)	424			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	406			
	Turbidity (NTU)	0.50			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	215			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	215			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	0.278			
	Chloride (Cl) (mg/L)	9.14			
	Fluoride (F) (mg/L)	0.150			
	Ion Balance (%)	85.1			
	Nitrate (as N) (mg/L)	1.95			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.326			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0033			
	Phosphorus (P)-Total (mg/L)	0.0028			
	Sulfate (SO4) (mg/L)	129			
	Anion Sum (meq/L)	7.40			
	Cation Sum (meq/L)	6.30			
	Cation - Anion Balance (%)	-8.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.08			
	Total Organic Carbon (mg/L)	0.89			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0056			
	Antimony (Sb)-Total (mg/L)	0.00013			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.172			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.012			
	Cadmium (Cd)-Total (ug/L)	0.0288			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2237657-1			
		Description	WP			
		Sampled Date	26-FEB-19			
		Sampled Time				
		Client ID	RG_DW-03-04_WP_Q1-2019_NP			
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)		80.8			
	Chromium (Cr)-Total (mg/L)		0.00021			
	Cobalt (Co)-Total (ug/L)		<0.10			
	Copper (Cu)-Total (mg/L)		0.0528			
	Iron (Fe)-Total (mg/L)		0.016			
	Lead (Pb)-Total (mg/L)		0.00327			
	Lithium (Li)-Total (mg/L)		0.0105			
	Magnesium (Mg)-Total (mg/L)		26.8			
	Manganese (Mn)-Total (mg/L)		0.00075			
	Mercury (Hg)-Total (mg/L)		<0.0000050			
	Molybdenum (Mo)-Total (mg/L)		0.00121			
	Nickel (Ni)-Total (mg/L)		0.0188			
	Potassium (K)-Total (mg/L)		0.990			
	Selenium (Se)-Total (ug/L)		12.4			
	Silicon (Si)-Total (mg/L)		2.66			
	Silver (Ag)-Total (mg/L)		0.000011			
	Sodium (Na)-Total (mg/L)		5.85			
	Strontium (Sr)-Total (mg/L)		0.184			
	Thallium (Tl)-Total (mg/L)		<0.000010			
	Tin (Sn)-Total (mg/L)		0.00048			
	Titanium (Ti)-Total (mg/L)		<0.010			
	Uranium (U)-Total (mg/L)		0.00124			
	Vanadium (V)-Total (mg/L)		<0.00050			
	Zinc (Zn)-Total (mg/L)		0.0503			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD			
	Dissolved Metals Filtration Location		FIELD			
	Aluminum (Al)-Dissolved (mg/L)		<0.0030			
	Antimony (Sb)-Dissolved (mg/L)		0.00011			
	Arsenic (As)-Dissolved (mg/L)		<0.00010			
	Barium (Ba)-Dissolved (mg/L)		0.171			
	Beryllium (Be)-Dissolved (ug/L)		<0.020			
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050			
	Boron (B)-Dissolved (mg/L)		0.010			
	Cadmium (Cd)-Dissolved (ug/L)		0.0209			
	Calcium (Ca)-Dissolved (mg/L)		78.5			
	Chromium (Cr)-Dissolved (mg/L)		0.00015			
	Cobalt (Co)-Dissolved (ug/L)		<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2237657-1 WP 26-FEB-19  RG_DW-03-04_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.0250			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.00162			
	Lithium (Li)-Dissolved (mg/L)	0.0096			
	Magnesium (Mg)-Dissolved (mg/L)	25.5			
	Manganese (Mn)-Dissolved (mg/L)	0.00047			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00105			
	Nickel (Ni)-Dissolved (mg/L)	0.0120			
	Potassium (K)-Dissolved (mg/L)	0.974			
	Selenium (Se)-Dissolved (ug/L)	15.8			
	Silicon (Si)-Dissolved (mg/L)	2.48			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	6.03			
	Strontium (Sr)-Dissolved (mg/L)	0.188			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00114			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0318			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Manganese (Mn)-Total	MB-LOR	L2237657-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2237657-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2237657-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2237657-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2237657-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2237657-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2237657-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2237657-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2237657-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2237657-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2237657-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                  Water                  Sulfate in Water by IC                                  EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                  Water                  Total Dissolved Solids                                  APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                  Water                  Ion Balance Calculation                                  APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) =  $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$

**TKN-L-F-CL**                  Water                  Total Kjeldahl Nitrogen                                  APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                  Water                  Total Suspended Solids                                  APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                  Water                  Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

03-04\_2019-02-26

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

< - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4541145							
<b>WG2999505-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.8		%		85-115	04-MAR-19
<b>WG2999505-7</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	04-MAR-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	01-MAR-19
<b>WG2998047-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-MAR-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4537228							
<b>WG2998157-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.4		%		80-120	01-MAR-19
<b>WG2998157-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	01-MAR-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4535327							
<b>WG2997600-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			101.0		%		80-120	28-FEB-19
<b>WG2997600-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	28-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Bromide (Br)			101.5		%		85-115	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	27-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4545187							
<b>WG3000775-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.6		%		80-120	05-MAR-19
<b>WG3000775-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4545187							
<b>WG3000775-2</b>	<b>LCS</b>							
Total Organic Carbon			98.9		%		80-120	05-MAR-19
<b>WG3000775-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	05-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Chloride (Cl)			100.3		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	27-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100147.50		uS/cm			01-MAR-19
<b>WG2998047-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	01-MAR-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Fluoride (F)			102.4		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	27-FEB-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4536479							
<b>WG2998098-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-MAR-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4540510							
<b>WG2999381-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.0		%		80-120	04-MAR-19
<b>WG2999381-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-MAR-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537228</b>							
<b>WG2998157-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			95.8		%		80-120	01-MAR-19
Antimony (Sb)-Dissolved			94.8		%		80-120	01-MAR-19
Arsenic (As)-Dissolved			94.8		%		80-120	01-MAR-19
Barium (Ba)-Dissolved			96.5		%		80-120	01-MAR-19
Bismuth (Bi)-Dissolved			101.4		%		80-120	01-MAR-19
Boron (B)-Dissolved			94.9		%		80-120	01-MAR-19
Cadmium (Cd)-Dissolved			96.2		%		80-120	01-MAR-19
Calcium (Ca)-Dissolved			91.9		%		80-120	01-MAR-19
Chromium (Cr)-Dissolved			94.6		%		80-120	01-MAR-19
Cobalt (Co)-Dissolved			95.8		%		80-120	01-MAR-19
Copper (Cu)-Dissolved			93.4		%		80-120	01-MAR-19
Iron (Fe)-Dissolved			91.5		%		80-120	01-MAR-19
Lead (Pb)-Dissolved			94.2		%		80-120	01-MAR-19
Lithium (Li)-Dissolved			89.8		%		80-120	01-MAR-19
Magnesium (Mg)-Dissolved			95.2		%		80-120	01-MAR-19
Manganese (Mn)-Dissolved			96.5		%		80-120	01-MAR-19
Molybdenum (Mo)-Dissolved			98.4		%		80-120	01-MAR-19
Nickel (Ni)-Dissolved			89.7		%		80-120	01-MAR-19
Potassium (K)-Dissolved			96.7		%		80-120	01-MAR-19
Selenium (Se)-Dissolved			103.1		%		80-120	01-MAR-19
Silicon (Si)-Dissolved			96.7		%		60-140	01-MAR-19
Silver (Ag)-Dissolved			95.5		%		80-120	01-MAR-19
Sodium (Na)-Dissolved			99.6		%		80-120	01-MAR-19
Strontium (Sr)-Dissolved			97.2		%		80-120	01-MAR-19
Thallium (Tl)-Dissolved			95.0		%		80-120	01-MAR-19
Tin (Sn)-Dissolved			95.8		%		80-120	01-MAR-19
Titanium (Ti)-Dissolved			95.0		%		80-120	01-MAR-19
Uranium (U)-Dissolved			103.0		%		80-120	01-MAR-19
Vanadium (V)-Dissolved			99.1		%		80-120	01-MAR-19
Zinc (Zn)-Dissolved			100.2		%		80-120	01-MAR-19
<b>WG2998157-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4537228</b>							
<b>WG2998157-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	01-MAR-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	01-MAR-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	01-MAR-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	01-MAR-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	01-MAR-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	01-MAR-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	01-MAR-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	01-MAR-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	01-MAR-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	01-MAR-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	01-MAR-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	01-MAR-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	01-MAR-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4535327</b>							
<b>WG2997600-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			99.0		%		80-120	28-FEB-19
Antimony (Sb)-Total			98.2		%		80-120	28-FEB-19
Arsenic (As)-Total			96.4		%		80-120	28-FEB-19
Barium (Ba)-Total			96.5		%		80-120	28-FEB-19



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4535327</b>							
<b>WG2997600-2 LCS</b>								
Bismuth (Bi)-Total			89.9		%		80-120	28-FEB-19
Boron (B)-Total			96.5		%		80-120	28-FEB-19
Cadmium (Cd)-Total			96.5		%		80-120	28-FEB-19
Calcium (Ca)-Total			98.5		%		80-120	28-FEB-19
Chromium (Cr)-Total			97.7		%		80-120	28-FEB-19
Cobalt (Co)-Total			94.9		%		80-120	28-FEB-19
Copper (Cu)-Total			94.0		%		80-120	28-FEB-19
Iron (Fe)-Total			93.1		%		80-120	28-FEB-19
Lead (Pb)-Total			97.0		%		80-120	28-FEB-19
Lithium (Li)-Total			99.7		%		80-120	28-FEB-19
Magnesium (Mg)-Total			97.9		%		80-120	28-FEB-19
Manganese (Mn)-Total			97.3		%		80-120	28-FEB-19
Molybdenum (Mo)-Total			97.0		%		80-120	28-FEB-19
Nickel (Ni)-Total			92.0		%		80-120	28-FEB-19
Potassium (K)-Total			95.2		%		80-120	28-FEB-19
Selenium (Se)-Total			90.7		%		80-120	28-FEB-19
Silicon (Si)-Total			99.5		%		80-120	28-FEB-19
Silver (Ag)-Total			94.3		%		80-120	28-FEB-19
Sodium (Na)-Total			97.8		%		80-120	28-FEB-19
Strontium (Sr)-Total			98.2		%		80-120	28-FEB-19
Thallium (Tl)-Total			91.4		%		80-120	28-FEB-19
Tin (Sn)-Total			95.1		%		80-120	28-FEB-19
Titanium (Ti)-Total			96.3		%		80-120	28-FEB-19
Uranium (U)-Total			101.1		%		80-120	28-FEB-19
Vanadium (V)-Total			97.5		%		80-120	28-FEB-19
Zinc (Zn)-Total			94.6		%		80-120	28-FEB-19
<b>WG2997600-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	28-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	28-FEB-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	28-FEB-19



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4535327</b>							
<b>WG2997600-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	28-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	28-FEB-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	28-FEB-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	28-FEB-19
Manganese (Mn)-Total			0.00011	MB-LOR	mg/L		0.0001	28-FEB-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	28-FEB-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	28-FEB-19
Silicon (Si)-Total			<0.10		mg/L		0.1	28-FEB-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	28-FEB-19
Sodium (Na)-Total			<0.050		mg/L		0.05	28-FEB-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	28-FEB-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	28-FEB-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	28-FEB-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	28-FEB-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	28-FEB-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	28-FEB-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	28-FEB-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4543991</b>							
<b>WG2999926-6</b>	<b>LCS</b>							
Ammonia as N			105.8		%		85-115	04-MAR-19
<b>WG2999926-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4533248</b>							
<b>WG2997153-14</b>	<b>LCS</b>							
Nitrite (as N)			105.4		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	27-FEB-19



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Nitrate (as N)			101.2		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	27-FEB-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4541135							
<b>WG2999490-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			220		mV		210-230	04-MAR-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4540732							
<b>WG2999455-6</b>	<b>LCS</b>							
Phosphorus (P)-Total			98.2		%		80-120	04-MAR-19
<b>WG2999455-5</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-MAR-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4537868							
<b>WG2998047-8</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	01-MAR-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4531788							
<b>WG2996621-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.7		%		80-120	27-FEB-19
<b>WG2996621-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	27-FEB-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4533248							
<b>WG2997153-14</b>	<b>LCS</b>							
Sulfate (SO4)			99.97		%		90-110	27-FEB-19
<b>WG2997153-13</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	27-FEB-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4546887							
<b>WG3000414-2</b>	<b>LCS</b>							
Total Dissolved Solids			100.5		%		85-115	05-MAR-19
<b>WG3000414-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R4546887								
WG3000414-1 MB								
Total Dissolved Solids			<10		mg/L		10	05-MAR-19
<b>TKN-L-F-CL</b>								
Water								
Batch R4545949								
WG2998092-2 LCS								
Total Kjeldahl Nitrogen			101.9		%		75-125	05-MAR-19
WG2998092-6 LCS								
Total Kjeldahl Nitrogen			96.0		%		75-125	05-MAR-19
WG2998092-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
WG2998092-5 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>TSS-L-CL</b>								
Water								
Batch R4546947								
WG2999860-6 LCS								
Total Suspended Solids			99.5		%		85-115	05-MAR-19
WG2999860-5 MB								
Total Suspended Solids			<1.0		mg/L		1	05-MAR-19
<b>TURBIDITY-CL</b>								
Water								
Batch R4534769								
WG2997568-5 LCS								
Turbidity			96.5		%		85-115	28-FEB-19
WG2997568-4 MB								
Turbidity			<0.10		NTU		0.1	28-FEB-19

# Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

---

# Quality Control Report

Workorder: L2237657

Report Date: 06-MAR-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	26-FEB-19	04-MAR-19 12:00	0.25	144	hours	EHTR-FM
pH	1	26-FEB-19	01-MAR-19 09:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2237657 were received on 27-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **03-04\_2019-02-26**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	Filtered - F: Field, L: Lab, FL: Field & Lab, N: None
RG_DW-03-04_WP_Q1-2019_NP	RG_DW-03-04	WP	N	26-Feb-19	0:00	G	7	1	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			OK	2019/02/27 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) / X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Ryan Selopman	250-910-7287
	Signature: <i>[Handwritten Signature]</i>	Date/Time: 2019-02-26

50C



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 26-FEB-19  
Report Date: 12-NOV-19 15:42 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2236974  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-07\_2019-02-25  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 10:46

12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH).

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236974-1 WP 25-FEB-19 11:51 RG_DW-01- 07_WP_Q1-2019 _NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	771			
	Hardness (as CaCO3) (mg/L)	421			
	pH (pH)	7.79			
	ORP (mV)	393			
	Total Suspended Solids (mg/L)	1.3			
	Total Dissolved Solids (mg/L)	531	DLHC		
	Turbidity (NTU)	1.01			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	10.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	364			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	364			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	444			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	3.64			
	Fluoride (F) (mg/L)	0.089			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	98.6			
	Nitrate (as N) (mg/L)	0.681			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.105			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022			
	Phosphorus (P)-Total (mg/L)	0.0030			
	Sulfate (SO4) (mg/L)	65.7			
	Anion Sum (meq/L)	8.79			
Cation Sum (meq/L)	8.66				
Cation - Anion Balance (%)	-0.7				
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.96			
	Total Organic Carbon (mg/L)	0.99			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0058			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00016			
	Barium (Ba)-Total (mg/L)	0.118			
	Beryllium (Be)-Total (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236974-1 WP 25-FEB-19 11:51 RG_DW-01- 07_WP_Q1-2019 _NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.018			
	Cadmium (Cd)-Total (ug/L)	0.0489			
	Calcium (Ca)-Total (mg/L)	103			
	Chromium (Cr)-Total (mg/L)	0.00039			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.0156			
	Iron (Fe)-Total (mg/L)	0.125			
	Lead (Pb)-Total (mg/L)	0.000980			
	Lithium (Li)-Total (mg/L)	0.0062			
	Magnesium (Mg)-Total (mg/L)	37.9			
	Manganese (Mn)-Total (mg/L)	0.00084			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00426			
	Nickel (Ni)-Total (mg/L)	0.00244			
	Potassium (K)-Total (mg/L)	0.884			
	Selenium (Se)-Total (ug/L)	1.73			
	Silicon (Si)-Total (mg/L)	6.35			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	5.03			
	Strontium (Sr)-Total (mg/L)	0.299			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	0.00024			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00167			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0204			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.110			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.020			
	Cadmium (Cd)-Dissolved (ug/L)	0.0374			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2236974-1 WP 25-FEB-19 11:51 RG_DW-01- 07_WP_Q1-2019 _NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Calcium (Ca)-Dissolved (mg/L)	107			
	Chromium (Cr)-Dissolved (mg/L)	0.00022			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00202			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000130			
	Lithium (Li)-Dissolved (mg/L)	0.0069			
	Magnesium (Mg)-Dissolved (mg/L)	37.3			
	Manganese (Mn)-Dissolved (mg/L)	0.00021			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00783 <sup>DTMF</sup>			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.860			
	Selenium (Se)-Dissolved (ug/L)	1.89			
	Silicon (Si)-Dissolved (mg/L)	6.42			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	5.19			
	Strontium (Sr)-Dissolved (mg/L)	0.268			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00162			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0082			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2236974-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2236974-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2236974-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2236974-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2236974-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2236974-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2236974-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2236974-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2236974-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2236974-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2236974-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2236974-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2236974-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2236974-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2236974-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The			

## Reference Information

carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**CO3-CL** Water Carbonate (CO<sub>3</sub>) APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum

## Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**                      Water              Phosphorus (P)-Total                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**                                      Water              pH                                      APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**                      Water              Orthophosphate-Dissolved (as P)                      APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                              Water              Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                              Water              Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water              Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                              Water              Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                              Water              Turbidity                              APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

01-07\_2019-02-25



## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 1 of 12

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4534671							
<b>WG2997321-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.3		%		85-115	28-FEB-19
<b>WG2997321-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.3		mg/L		2	28-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	28-FEB-19
<b>WG2997315-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4532289							
<b>WG2996675-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.9		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-FEB-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4533587							
<b>WG2996609-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			90.9		%		80-120	27-FEB-19
<b>WG2996609-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-FEB-19
<b>WG2996609-4</b>	<b>MS</b>	<b>L2236974-1</b>						
Beryllium (Be)-Total			88.5		%		70-130	27-FEB-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Bromide (Br)			104.7		%		85-115	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-FEB-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			105.0		%		80-120	04-MAR-19
<b>WG3000116-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2</b>	<b>LCS</b>							
Total Organic Carbon			99.7		%		80-120	04-MAR-19
<b>WG3000116-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-FEB-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-13</b>	<b>MB</b>							
Carbonate (CO3)			<5.0		mg/L		5	28-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			101.5		%		90-110	28-FEB-19
<b>WG2997315-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Fluoride (F)			101.6		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-FEB-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-D-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533650</b>							
<b>WG2997277-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.8		%		80-120	28-FEB-19
<b>WG2997277-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-FEB-19
<b>HG-T-CVAA-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4538727</b>							
<b>WG2998709-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.2		%		80-120	02-MAR-19
<b>WG2998709-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-MAR-19
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			91.5		%		80-120	27-FEB-19
Antimony (Sb)-Dissolved			90.8		%		80-120	27-FEB-19
Arsenic (As)-Dissolved			92.0		%		80-120	27-FEB-19
Barium (Ba)-Dissolved			91.1		%		80-120	27-FEB-19
Bismuth (Bi)-Dissolved			93.3		%		80-120	27-FEB-19
Boron (B)-Dissolved			90.2		%		80-120	27-FEB-19
Cadmium (Cd)-Dissolved			91.3		%		80-120	27-FEB-19
Calcium (Ca)-Dissolved			95.5		%		80-120	27-FEB-19
Chromium (Cr)-Dissolved			95.1		%		80-120	27-FEB-19
Cobalt (Co)-Dissolved			90.1		%		80-120	27-FEB-19
Copper (Cu)-Dissolved			91.9		%		80-120	27-FEB-19
Iron (Fe)-Dissolved			93.2		%		80-120	27-FEB-19
Lead (Pb)-Dissolved			97.0		%		80-120	27-FEB-19
Lithium (Li)-Dissolved			94.5		%		80-120	27-FEB-19
Magnesium (Mg)-Dissolved			89.3		%		80-120	27-FEB-19
Manganese (Mn)-Dissolved			91.9		%		80-120	27-FEB-19
Molybdenum (Mo)-Dissolved			97.7		%		80-120	27-FEB-19
Nickel (Ni)-Dissolved			89.9		%		80-120	27-FEB-19
Potassium (K)-Dissolved			90.6		%		80-120	27-FEB-19
Selenium (Se)-Dissolved			96.1		%		80-120	27-FEB-19
Silicon (Si)-Dissolved			97.1		%		60-140	27-FEB-19
Silver (Ag)-Dissolved			90.7		%		80-120	27-FEB-19
Sodium (Na)-Dissolved			93.4		%		80-120	27-FEB-19



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-2</b>	<b>LCS</b>							
Strontium (Sr)-Dissolved			92.7		%		80-120	27-FEB-19
Thallium (Tl)-Dissolved			94.9		%		80-120	27-FEB-19
Tin (Sn)-Dissolved			93.2		%		80-120	27-FEB-19
Titanium (Ti)-Dissolved			86.9		%		80-120	27-FEB-19
Uranium (U)-Dissolved			97.8		%		80-120	27-FEB-19
Vanadium (V)-Dissolved			93.5		%		80-120	27-FEB-19
Zinc (Zn)-Dissolved			93.8		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.2		%		80-120	27-FEB-19
Antimony (Sb)-Total			100.8		%		80-120	27-FEB-19
Arsenic (As)-Total			97.6		%		80-120	27-FEB-19
Barium (Ba)-Total			95.5		%		80-120	27-FEB-19
Bismuth (Bi)-Total			94.0		%		80-120	27-FEB-19
Boron (B)-Total			92.2		%		80-120	27-FEB-19
Cadmium (Cd)-Total			95.8		%		80-120	27-FEB-19
Calcium (Ca)-Total			94.1		%		80-120	27-FEB-19
Chromium (Cr)-Total			96.0		%		80-120	27-FEB-19
Cobalt (Co)-Total			94.9		%		80-120	27-FEB-19
Copper (Cu)-Total			94.9		%		80-120	27-FEB-19
Iron (Fe)-Total			93.5		%		80-120	27-FEB-19
Lead (Pb)-Total			92.9		%		80-120	27-FEB-19
Lithium (Li)-Total			90.5		%		80-120	27-FEB-19
Magnesium (Mg)-Total			102.1		%		80-120	27-FEB-19
Manganese (Mn)-Total			95.8		%		80-120	27-FEB-19
Molybdenum (Mo)-Total			99.97		%		80-120	27-FEB-19
Nickel (Ni)-Total			95.1		%		80-120	27-FEB-19
Potassium (K)-Total			98.2		%		80-120	27-FEB-19
Selenium (Se)-Total			96.3		%		80-120	27-FEB-19
Silicon (Si)-Total			96.3		%		80-120	27-FEB-19
Silver (Ag)-Total			91.7		%		80-120	27-FEB-19
Sodium (Na)-Total			101.4		%		80-120	27-FEB-19
Strontium (Sr)-Total			101.4		%		80-120	27-FEB-19
Thallium (Tl)-Total			92.4		%		80-120	27-FEB-19
Tin (Sn)-Total			96.7		%		80-120	27-FEB-19
Titanium (Ti)-Total			95.8		%		80-120	27-FEB-19



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-2</b>	<b>LCS</b>							
Uranium (U)-Total			92.7		%		80-120	27-FEB-19
Vanadium (V)-Total			97.8		%		80-120	27-FEB-19
Zinc (Zn)-Total			98.1		%		80-120	27-FEB-19
<b>WG2996609-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-FEB-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-FEB-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-FEB-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-FEB-19
<b>WG2996609-4</b>	<b>MS</b>	<b>L2236974-1</b>						



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-4 MS</b>		<b>L2236974-1</b>						
Aluminum (Al)-Total			93.8		%		70-130	27-FEB-19
Antimony (Sb)-Total			98.1		%		70-130	27-FEB-19
Arsenic (As)-Total			98.5		%		70-130	27-FEB-19
Barium (Ba)-Total			N/A	MS-B	%		-	27-FEB-19
Bismuth (Bi)-Total			89.9		%		70-130	27-FEB-19
Boron (B)-Total			92.7		%		70-130	27-FEB-19
Cadmium (Cd)-Total			99.9		%		70-130	27-FEB-19
Calcium (Ca)-Total			N/A	MS-B	%		-	27-FEB-19
Chromium (Cr)-Total			94.8		%		70-130	27-FEB-19
Cobalt (Co)-Total			92.0		%		70-130	27-FEB-19
Copper (Cu)-Total			104.1		%		70-130	27-FEB-19
Iron (Fe)-Total			93.5		%		70-130	27-FEB-19
Lead (Pb)-Total			91.4		%		70-130	27-FEB-19
Lithium (Li)-Total			85.2		%		70-130	27-FEB-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	27-FEB-19
Manganese (Mn)-Total			92.4		%		70-130	27-FEB-19
Molybdenum (Mo)-Total			99.7		%		70-130	27-FEB-19
Nickel (Ni)-Total			90.8		%		70-130	27-FEB-19
Potassium (K)-Total			97.6		%		70-130	27-FEB-19
Selenium (Se)-Total			99.5		%		70-130	27-FEB-19
Silicon (Si)-Total			87.3		%		70-130	27-FEB-19
Silver (Ag)-Total			92.9		%		70-130	27-FEB-19
Sodium (Na)-Total			N/A	MS-B	%		-	27-FEB-19
Strontium (Sr)-Total			N/A	MS-B	%		-	27-FEB-19
Thallium (Tl)-Total			91.5		%		70-130	27-FEB-19
Tin (Sn)-Total			96.0		%		70-130	27-FEB-19
Titanium (Ti)-Total			98.9		%		70-130	27-FEB-19
Uranium (U)-Total			93.5		%		70-130	27-FEB-19
Vanadium (V)-Total			98.3		%		70-130	27-FEB-19
Zinc (Zn)-Total			92.3		%		70-130	27-FEB-19

**NH3-L-F-CL**

**Water**





## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-L-F-CL</b>								
<b>Water</b>								
Batch	R4543991							
<b>WG2999926-2</b>	<b>LCS</b>							
Ammonia as N			105.2		%		85-115	04-MAR-19
<b>WG2999926-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-MAR-19
<b>NO2-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Nitrite (as N)			102.1		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-FEB-19
<b>NO3-L-IC-N-CL</b>								
<b>Water</b>								
Batch	R4530188							
<b>WG2996370-6</b>	<b>LCS</b>							
Nitrate (as N)			100.4		%		90-110	26-FEB-19
<b>WG2996370-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-FEB-19
<b>OH-CL</b>								
<b>Water</b>								
Batch	R4534589							
<b>WG2997315-13</b>	<b>MB</b>							
Hydroxide (OH)			<5.0		mg/L		5	28-FEB-19
<b>ORP-CL</b>								
<b>Water</b>								
Batch	R4531948							
<b>WG2996795-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	27-FEB-19
<b>P-T-L-COL-CL</b>								
<b>Water</b>								
Batch	R4534092							
<b>WG2997425-8</b>	<b>LCS</b>							
Phosphorus (P)-Total			104.1		%		80-120	28-FEB-19
<b>WG2997425-7</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-FEB-19
<b>PH-CL</b>								
<b>Water</b>								
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
pH			7.02		pH		6.9-7.1	28-FEB-19



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4528108							
<b>WG2995602-10 LCS</b>								
Orthophosphate-Dissolved (as P)			99.0		%		80-120	26-FEB-19
<b>WG2995602-9 MB</b>								
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-FEB-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-6 LCS</b>								
Sulfate (SO4)			99.3		%		90-110	26-FEB-19
<b>WG2996370-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	26-FEB-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4538554							
<b>WG2997906-2 LCS</b>								
Total Dissolved Solids			99.1		%		85-115	01-MAR-19
<b>WG2997906-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-MAR-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4537608							
<b>WG2997243-10 LCS</b>								
Total Kjeldahl Nitrogen			93.6		%		75-125	05-MAR-19
<b>WG2997243-2 LCS</b>								
Total Kjeldahl Nitrogen			86.3		%		75-125	01-MAR-19
<b>WG2997243-6 LCS</b>								
Total Kjeldahl Nitrogen			86.9		%		75-125	01-MAR-19
<b>WG2997243-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
<b>WG2997243-5 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
<b>WG2997243-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4538548							
<b>WG2998301-4 LCS</b>								
Total Suspended Solids			113.8		%		85-115	01-MAR-19
<b>WG2998301-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	01-MAR-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4529047</b>							
<b>WG2995952-8</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	26-FEB-19
<b>WG2995952-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	26-FEB-19

# Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

---

# Quality Control Report

Workorder: L2236974

Report Date: 12-NOV-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	25-FEB-19 11:51	27-FEB-19 11:15	0.25	48	hours	EHTR-FM
pH	1	25-FEB-19 11:51	28-FEB-19 09:00	0.25	69	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2236974 were received on 26-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-07\_2019-02-25**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excl	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package_DOC	ALS_Package_TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-01-07_WP_Q1-2019_NP	RG_DW-01-03	WP	N	25-Feb-19	08:00	G	7	1	1	1	1	1	1	1
					11:51									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>Jennifer Dewerk</i>	2/26/19
<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
Sampler's Name	<i>Jennifer Dewerk</i>		Mobile #	250-910-7287
Sampler's Signature	<i>Jennifer Dewerk</i>		Date/Time	Feb 25, 2019



L2236974-COFC



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 26-FEB-19  
Report Date: 12-NOV-19 15:57 (MT)  
Version: FINAL REV. 2

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2236994  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-03\_2019-02-25  
Legal Site Desc:

Comments: ADDITIONAL 07-NOV-19 12:23

12-NOV-2019 Additional analysis for bicarbonate (as HCO<sub>3</sub>), carbonate (as CO<sub>3</sub>), and hydroxide (as OH)

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236994-1 WP 25-FEB-19 11:04 RG_DW-01-03_WP_Q1-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	346			
	Hardness (as CaCO3) (mg/L)	183			
	pH (pH)	8.14			
	ORP (mV)	416			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	268	DLHC		
	Turbidity (NTU)	0.32			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	165			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	165			
	Ammonia as N (mg/L)	<0.0050			
	Bicarbonate (HCO3) (mg/L)	201			
	Bromide (Br) (mg/L)	<0.050			
	Carbonate (CO3) (mg/L)	<5.0			
	Chloride (Cl) (mg/L)	0.73			
	Fluoride (F) (mg/L)	0.148			
	Hydroxide (OH) (mg/L)	<5.0			
	Ion Balance (%)	90.7			
	Nitrate (as N) (mg/L)	0.683			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.158			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0021			
	Phosphorus (P)-Total (mg/L)	0.0030			
	Sulfate (SO4) (mg/L)	34.8			
	Anion Sum (meq/L)	4.10			
	Cation Sum (meq/L)	3.72			
	Cation - Anion Balance (%)	-4.9			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.0732			
	Beryllium (Be)-Total (ug/L)	<0.020			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2236994-1 WP 25-FEB-19 11:04 RG_DW-01- 03_WP_Q1- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0066			
	Calcium (Ca)-Total (mg/L)	50.7			
	Chromium (Cr)-Total (mg/L)	0.00030			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00082			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000051			
	Lithium (Li)-Total (mg/L)	0.0022			
	Magnesium (Mg)-Total (mg/L)	13.5			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00100			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.406			
	Selenium (Se)-Total (ug/L)	3.02			
	Silicon (Si)-Total (mg/L)	2.14			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.35			
	Strontium (Sr)-Total (mg/L)	0.204			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000783			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0037			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0690			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0054			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2236994-1 WP 25-FEB-19 11:04 RG_DW-01- 03_WP_Q1- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Calcium (Ca)-Dissolved (mg/L)	52.8			
	Chromium (Cr)-Dissolved (mg/L)	0.00023			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00070			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0024			
	Magnesium (Mg)-Dissolved (mg/L)	12.4			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000950			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.356			
	Selenium (Se)-Dissolved (ug/L)	3.01			
	Silicon (Si)-Dissolved (mg/L)	2.03			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.19			
	Strontium (Sr)-Dissolved (mg/L)	0.190			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000776			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0030			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2236994-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2236994-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2236994-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2236994-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2236994-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2236994-1
Matrix Spike	Selenium (Se)-Dissolved	MS-B	L2236994-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2236994-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2236994-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2236994-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2236994-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2236994-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2236994-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2236994-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2236994-1
Matrix Spike	Ammonia as N	MS-B	L2236994-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BIC-CL</b>	Water	Bicarbonate (HCO <sub>3</sub> )	APHA 2320 B-Pot. Titration
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a			

## Reference Information

halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**CO3-CL** Water Carbonate (CO<sub>3</sub>) APHA 2320 B-Potentiometric Titration

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**OH-CL** Water Hydroxide in Water APHA 2320 B-Potentiometric Titration

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

## Reference Information

It is recommended that this analysis be conducted in the field.

<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

01-03\_2019-02-25

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 1 of 12

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4534671							
<b>WG2997321-8</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.0		%		85-115	28-FEB-19
<b>WG2997321-7</b>	<b>MB</b>							
Acidity (as CaCO3)			1.8		mg/L		2	28-FEB-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.7		%		85-115	28-FEB-19
<b>WG2997315-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-FEB-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4532289							
<b>WG2996675-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.9		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	27-FEB-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4533587							
<b>WG2996609-3</b>	<b>DUP</b>	<b>L2236994-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	27-FEB-19
<b>WG2996609-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			90.9		%		80-120	27-FEB-19
<b>WG2996609-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-FEB-19
<b>BIC-CL</b>								
	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-13</b>	<b>MB</b>							
Bicarbonate (HCO3)			<5.0		mg/L		5	28-FEB-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-11</b>	<b>DUP</b>	<b>L2236994-1</b>						
Bromide (Br)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	26-FEB-19
<b>WG2996370-10</b>	<b>LCS</b>							
Bromide (Br)			104.1		%		85-115	26-FEB-19
<b>WG2996370-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>BR-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-12 MS</b>		<b>L2236994-1</b>						
Bromide (Br)			105.8		%		75-125	26-FEB-19
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2 LCS</b>								
Dissolved Organic Carbon			105.0		%		80-120	04-MAR-19
<b>WG3000116-1 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4543227							
<b>WG3000116-2 LCS</b>								
Total Organic Carbon			99.7		%		80-120	04-MAR-19
<b>WG3000116-1 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	04-MAR-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4530188							
<b>WG2996370-11 DUP</b>		<b>L2236994-1</b>						
Chloride (Cl)		0.73	0.75		mg/L	1.8	20	26-FEB-19
<b>WG2996370-10 LCS</b>								
Chloride (Cl)			101.8		%		90-110	26-FEB-19
<b>WG2996370-9 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	26-FEB-19
<b>WG2996370-12 MS</b>		<b>L2236994-1</b>						
Chloride (Cl)			103.4		%		75-125	26-FEB-19
<b>CO3-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-13 MB</b>								
Carbonate (CO3)			<5.0		mg/L		5	28-FEB-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4534589							
<b>WG2997315-14 LCS</b>								
Conductivity (@ 25C)			101.5		%		90-110	28-FEB-19
<b>WG2997315-13 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	28-FEB-19
<b>F-IC-N-CL</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-CL</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4530188</b>							
<b>WG2996370-11</b>	<b>DUP</b>	<b>L2236994-1</b>						
Fluoride (F)		0.148	0.151		mg/L	1.8	20	26-FEB-19
<b>WG2996370-10</b>	<b>LCS</b>							
Fluoride (F)			104.1		%		90-110	26-FEB-19
<b>WG2996370-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-FEB-19
<b>WG2996370-12</b>	<b>MS</b>	<b>L2236994-1</b>						
Fluoride (F)			106.7		%		75-125	26-FEB-19
<b>HG-D-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4533650</b>							
<b>WG2997277-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.8		%		80-120	28-FEB-19
<b>WG2997277-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-FEB-19
<b>HG-T-CVAA-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4538727</b>							
<b>WG2998709-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.2		%		80-120	02-MAR-19
<b>WG2998709-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-MAR-19
<b>MET-D-CCMS-VA</b>								
<b>Water</b>								
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			91.5		%		80-120	27-FEB-19
Antimony (Sb)-Dissolved			90.8		%		80-120	27-FEB-19
Arsenic (As)-Dissolved			92.0		%		80-120	27-FEB-19
Barium (Ba)-Dissolved			91.1		%		80-120	27-FEB-19
Bismuth (Bi)-Dissolved			93.3		%		80-120	27-FEB-19
Boron (B)-Dissolved			90.2		%		80-120	27-FEB-19
Cadmium (Cd)-Dissolved			91.3		%		80-120	27-FEB-19
Calcium (Ca)-Dissolved			95.5		%		80-120	27-FEB-19
Chromium (Cr)-Dissolved			95.1		%		80-120	27-FEB-19
Cobalt (Co)-Dissolved			90.1		%		80-120	27-FEB-19
Copper (Cu)-Dissolved			91.9		%		80-120	27-FEB-19
Iron (Fe)-Dissolved			93.2		%		80-120	27-FEB-19
Lead (Pb)-Dissolved			97.0		%		80-120	27-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-2</b>	<b>LCS</b>							
Lithium (Li)-Dissolved			94.5		%		80-120	27-FEB-19
Magnesium (Mg)-Dissolved			89.3		%		80-120	27-FEB-19
Manganese (Mn)-Dissolved			91.9		%		80-120	27-FEB-19
Molybdenum (Mo)-Dissolved			97.7		%		80-120	27-FEB-19
Nickel (Ni)-Dissolved			89.9		%		80-120	27-FEB-19
Potassium (K)-Dissolved			90.6		%		80-120	27-FEB-19
Selenium (Se)-Dissolved			96.1		%		80-120	27-FEB-19
Silicon (Si)-Dissolved			97.1		%		60-140	27-FEB-19
Silver (Ag)-Dissolved			90.7		%		80-120	27-FEB-19
Sodium (Na)-Dissolved			93.4		%		80-120	27-FEB-19
Strontium (Sr)-Dissolved			92.7		%		80-120	27-FEB-19
Thallium (Tl)-Dissolved			94.9		%		80-120	27-FEB-19
Tin (Sn)-Dissolved			93.2		%		80-120	27-FEB-19
Titanium (Ti)-Dissolved			86.9		%		80-120	27-FEB-19
Uranium (U)-Dissolved			97.8		%		80-120	27-FEB-19
Vanadium (V)-Dissolved			93.5		%		80-120	27-FEB-19
Zinc (Zn)-Dissolved			93.8		%		80-120	27-FEB-19
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	27-FEB-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4532289</b>							
<b>WG2996675-1</b>	<b>MB</b>	<b>NP</b>						
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	27-FEB-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	27-FEB-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	27-FEB-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-3</b>	<b>DUP</b>	<b>L2236994-1</b>						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	27-FEB-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-FEB-19
Arsenic (As)-Total		0.00011	0.00012		mg/L	8.0	20	27-FEB-19
Barium (Ba)-Total		0.0732	0.0745		mg/L	1.8	20	27-FEB-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	27-FEB-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-FEB-19
Cadmium (Cd)-Total		0.0000066	<0.0000050	RPD-NA	mg/L	N/A	20	27-FEB-19
Calcium (Ca)-Total		50.7	50.2		mg/L	1.1	20	27-FEB-19
Chromium (Cr)-Total		0.00030	0.00028		mg/L	8.9	20	27-FEB-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-FEB-19
Copper (Cu)-Total		0.00082	0.00085		mg/L	3.5	20	27-FEB-19
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-FEB-19
Lead (Pb)-Total		0.000051	0.000052		mg/L	2.1	20	27-FEB-19
Lithium (Li)-Total		0.0022	0.0022		mg/L	1.2	20	27-FEB-19
Magnesium (Mg)-Total		13.5	13.7		mg/L	1.2	20	27-FEB-19
Manganese (Mn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-FEB-19
Molybdenum (Mo)-Total		0.00100	0.00102		mg/L	1.4	20	27-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-3</b>	<b>DUP</b>	<b>L2236994-1</b>						
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-FEB-19
Potassium (K)-Total		0.406	0.407		mg/L	0.3	20	27-FEB-19
Selenium (Se)-Total		0.00302	0.00293		mg/L	2.9	20	27-FEB-19
Silicon (Si)-Total		2.14	2.17		mg/L	1.4	20	27-FEB-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-FEB-19
Sodium (Na)-Total		1.35	1.34		mg/L	0.8	20	27-FEB-19
Strontium (Sr)-Total		0.204	0.211		mg/L	3.2	20	27-FEB-19
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	27-FEB-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-FEB-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	27-FEB-19
Uranium (U)-Total		0.000783	0.000810		mg/L	3.4	20	27-FEB-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	27-FEB-19
Zinc (Zn)-Total		0.0037	0.0039		mg/L	6.5	20	27-FEB-19
<b>WG2996609-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			97.2		%		80-120	27-FEB-19
Antimony (Sb)-Total			100.8		%		80-120	27-FEB-19
Arsenic (As)-Total			97.6		%		80-120	27-FEB-19
Barium (Ba)-Total			95.5		%		80-120	27-FEB-19
Bismuth (Bi)-Total			94.0		%		80-120	27-FEB-19
Boron (B)-Total			92.2		%		80-120	27-FEB-19
Cadmium (Cd)-Total			95.8		%		80-120	27-FEB-19
Calcium (Ca)-Total			94.1		%		80-120	27-FEB-19
Chromium (Cr)-Total			96.0		%		80-120	27-FEB-19
Cobalt (Co)-Total			94.9		%		80-120	27-FEB-19
Copper (Cu)-Total			94.9		%		80-120	27-FEB-19
Iron (Fe)-Total			93.5		%		80-120	27-FEB-19
Lead (Pb)-Total			92.9		%		80-120	27-FEB-19
Lithium (Li)-Total			90.5		%		80-120	27-FEB-19
Magnesium (Mg)-Total			102.1		%		80-120	27-FEB-19
Manganese (Mn)-Total			95.8		%		80-120	27-FEB-19
Molybdenum (Mo)-Total			99.97		%		80-120	27-FEB-19
Nickel (Ni)-Total			95.1		%		80-120	27-FEB-19
Potassium (K)-Total			98.2		%		80-120	27-FEB-19
Selenium (Se)-Total			96.3		%		80-120	27-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4533587</b>							
<b>WG2996609-2</b>	<b>LCS</b>							
Silicon (Si)-Total			96.3		%		80-120	27-FEB-19
Silver (Ag)-Total			91.7		%		80-120	27-FEB-19
Sodium (Na)-Total			101.4		%		80-120	27-FEB-19
Strontium (Sr)-Total			101.4		%		80-120	27-FEB-19
Thallium (Tl)-Total			92.4		%		80-120	27-FEB-19
Tin (Sn)-Total			96.7		%		80-120	27-FEB-19
Titanium (Ti)-Total			95.8		%		80-120	27-FEB-19
Uranium (U)-Total			92.7		%		80-120	27-FEB-19
Vanadium (V)-Total			97.8		%		80-120	27-FEB-19
Zinc (Zn)-Total			98.1		%		80-120	27-FEB-19
<b>WG2996609-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	27-FEB-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	27-FEB-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-FEB-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-FEB-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-FEB-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-FEB-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-FEB-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-FEB-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch R4533587</b>								
<b>WG2996609-1 MB</b>								
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-FEB-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-FEB-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-FEB-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-FEB-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-FEB-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-FEB-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch R4539670</b>								
<b>WG2999150-2 LCS</b>								
Ammonia as N			97.4		%		85-115	01-MAR-19
<b>WG2999150-1 MB</b>								
Ammonia as N			<0.0050		mg/L		0.005	01-MAR-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4530188</b>								
<b>WG2996370-11 DUP</b>		<b>L2236994-1</b>						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	26-FEB-19
<b>WG2996370-10 LCS</b>								
Nitrite (as N)			104.1		%		90-110	26-FEB-19
<b>WG2996370-9 MB</b>								
Nitrite (as N)			<0.0010		mg/L		0.001	26-FEB-19
<b>WG2996370-12 MS</b>		<b>L2236994-1</b>						
Nitrite (as N)			104.6		%		75-125	26-FEB-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch R4530188</b>								
<b>WG2996370-11 DUP</b>		<b>L2236994-1</b>						
Nitrate (as N)		0.683	0.696		mg/L	2.0	20	26-FEB-19
<b>WG2996370-10 LCS</b>								
Nitrate (as N)			102.4		%		90-110	26-FEB-19
<b>WG2996370-9 MB</b>								
Nitrate (as N)			<0.0050		mg/L		0.005	26-FEB-19
<b>WG2996370-12 MS</b>		<b>L2236994-1</b>						
Nitrate (as N)			103.3		%		75-125	26-FEB-19
<b>OH-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>OH-CL</b>	<b>Water</b>							
Batch R4534589 WG2997315-13 MB Hydroxide (OH)			<5.0		mg/L		5	28-FEB-19
<b>ORP-CL</b>	<b>Water</b>							
Batch R4531948 WG2996795-3 CRM ORP		<b>CL-ORP</b>	223		mV		210-230	27-FEB-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch R4534092 WG2997425-8 LCS Phosphorus (P)-Total			104.1		%		80-120	28-FEB-19
Batch R4534092 WG2997425-7 MB Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-FEB-19
<b>PH-CL</b>	<b>Water</b>							
Batch R4534589 WG2997315-14 LCS pH			7.02		pH		6.9-7.1	28-FEB-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch R4528108 WG2995602-10 LCS Orthophosphate-Dissolved (as P)			99.0		%		80-120	26-FEB-19
Batch R4528108 WG2995602-9 MB Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-FEB-19
Batch R4528108 WG2995602-12 MS Orthophosphate-Dissolved (as P)		<b>L2236994-1</b>	98.1		%		70-130	26-FEB-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch R4530188 WG2996370-11 DUP Sulfate (SO4)		<b>L2236994-1</b>	34.8 35.3		mg/L	1.2	20	26-FEB-19
Batch R4530188 WG2996370-10 LCS Sulfate (SO4)			101.4		%		90-110	26-FEB-19
Batch R4530188 WG2996370-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	26-FEB-19
Batch R4530188 WG2996370-12 MS Sulfate (SO4)		<b>L2236994-1</b>	100.8		%		75-125	26-FEB-19



## Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4538554							
<b>WG2997906-2</b>	<b>LCS</b>							
Total Dissolved Solids			99.1		%		85-115	01-MAR-19
<b>WG2997906-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	01-MAR-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4537608							
<b>WG2997243-10</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			93.6		%		75-125	05-MAR-19
<b>WG2997243-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.3		%		75-125	01-MAR-19
<b>WG2997243-6</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			86.9		%		75-125	01-MAR-19
<b>WG2997243-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
<b>WG2997243-5</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	01-MAR-19
<b>WG2997243-9</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	05-MAR-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4538548							
<b>WG2998301-4</b>	<b>LCS</b>							
Total Suspended Solids			113.8		%		85-115	01-MAR-19
<b>WG2998301-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	01-MAR-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4529047							
<b>WG2995952-8</b>	<b>LCS</b>							
Turbidity			96.5		%		85-115	26-FEB-19
<b>WG2995952-7</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	26-FEB-19



# Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2236994

Report Date: 12-NOV-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation redution potential by elect.	1	25-FEB-19 11:04	27-FEB-19 11:15	0.25	48	hours	EHTR-FM
pH	1	25-FEB-19 11:04	28-FEB-19 09:00	0.25	70	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2236994 were received on 26-FEB-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: 01-03\_2019-02-25

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allic.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field, L: Lab, FL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TRK/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-01-03_WP_Q1-2019_NP	RG_DW-01-03	WP	N	25-Feb-19	11:04	G	7	1	1	1	1	1	1	1



L2236994-COFC

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*Handwritten signature and date: 2/26/19*

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
				Sampler's Signature	<i>Handwritten signature</i>	Date/Time	Feb 25, 2019 <i>Handwritten date</i>



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 28-MAY-19  
Report Date: 04-JUN-19 17:01 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2280567  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-03\_2019-05-27  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID Description Sampled Date Sampled Time Client ID				
		L2280567-1 WP 27-MAY-19 09:38 RG_DW-01- 03_WP_Q2- 2019_NP				
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)		375			
	Hardness (as CaCO3) (mg/L)		182			
	pH (pH)		8.44			
	ORP (mV)		386			
	Total Suspended Solids (mg/L)		<1.0			
	Total Dissolved Solids (mg/L)		218	DLHC		
	Turbidity (NTU)		0.17			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		1.7			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		145			
	Alkalinity, Carbonate (as CaCO3) (mg/L)		4.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)		149			
	Ammonia as N (mg/L)		<0.0050			
	Bromide (Br) (mg/L)		<0.050			
	Chloride (Cl) (mg/L)		0.88			
	Fluoride (F) (mg/L)		0.153			
	Ion Balance (%)		94.1			
	Nitrate (as N) (mg/L)		0.913			
	Nitrite (as N) (mg/L)		<0.0010			
	Total Kjeldahl Nitrogen (mg/L)		0.248			
	Orthophosphate-Dissolved (as P) (mg/L)		0.0013			
	Phosphorus (P)-Total (mg/L)		0.0022			
	Sulfate (SO4) (mg/L)		41.6			
	Anion Sum (meq/L)		3.94			
	Cation Sum (meq/L)		3.71			
	Cation - Anion Balance (%)		-3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		<0.50			
	Total Organic Carbon (mg/L)		<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.0074			
	Antimony (Sb)-Total (mg/L)		<0.00010			
	Arsenic (As)-Total (mg/L)		0.00011			
	Barium (Ba)-Total (mg/L)		0.0868			
	Beryllium (Be)-Total (ug/L)		<0.020			
	Bismuth (Bi)-Total (mg/L)		<0.000050			
	Boron (B)-Total (mg/L)		<0.010			
	Cadmium (Cd)-Total (ug/L)		0.0098			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280567-1 WP 27-MAY-19 09:38 RG_DW-01- 03_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	60.5			
	Chromium (Cr)-Total (mg/L)	0.00046			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.0142			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000757			
	Lithium (Li)-Total (mg/L)	0.0024			
	Magnesium (Mg)-Total (mg/L)	14.9			
	Manganese (Mn)-Total (mg/L)	0.00025			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000990			
	Nickel (Ni)-Total (mg/L)	0.00062			
	Potassium (K)-Total (mg/L)	0.452			
	Selenium (Se)-Total (ug/L)	3.95			
	Silicon (Si)-Total (mg/L)	2.12			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.30			
	Strontium (Sr)-Total (mg/L)	0.209			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000795			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0359			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0794			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0081			
	Calcium (Ca)-Dissolved (mg/L)	50.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00028			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2280567-1	WP	27-MAY-19	09:38	RG_DW-01-03_WP_Q2-2019_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)					0.00135
	Iron (Fe)-Dissolved (mg/L)					<0.010
	Lead (Pb)-Dissolved (mg/L)					0.000117
	Lithium (Li)-Dissolved (mg/L)					0.0023
	Magnesium (Mg)-Dissolved (mg/L)					13.5
	Manganese (Mn)-Dissolved (mg/L)					<0.00010
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.000991
	Nickel (Ni)-Dissolved (mg/L)					<0.00050
	Potassium (K)-Dissolved (mg/L)					0.423
	Selenium (Se)-Dissolved (ug/L)					4.18
	Silicon (Si)-Dissolved (mg/L)					2.11
	Silver (Ag)-Dissolved (mg/L)					<0.000010
	Sodium (Na)-Dissolved (mg/L)					1.37
	Strontium (Sr)-Dissolved (mg/L)					0.211
	Thallium (Tl)-Dissolved (mg/L)					<0.000010
	Tin (Sn)-Dissolved (mg/L)					<0.00010
	Titanium (Ti)-Dissolved (mg/L)					<0.010
	Uranium (U)-Dissolved (mg/L)					0.000823
	Vanadium (V)-Dissolved (mg/L)					<0.00050
	Zinc (Zn)-Dissolved (mg/L)					0.0089

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2280567-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2280567-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2280567-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2280567-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2280567-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2280567-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2280567-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2280567-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2280567-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2280567-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)



## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                      Water              Sulfate in Water by IC                      EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                      Water              Total Dissolved Solids                      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**              Water              Ion Balance Calculation                      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                      Water              Total Kjeldahl Nitrogen                      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                      Water              Total Suspended Solids                      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                      Water              Turbidity                      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

01-03\_2019-05-27

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4656522							
<b>WG3066693-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.2		%		85-115	03-JUN-19
<b>WG3066693-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	03-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	03-JUN-19
<b>WG3066728-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4651500							
<b>WG3062311-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.9		%		80-120	30-MAY-19
<b>WG3062311-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4651391							
<b>WG3062303-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			102.2		%		80-120	30-MAY-19
<b>WG3062303-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	30-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4653370							
<b>WG3064875-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.5		%		80-120	31-MAY-19
<b>WG3064875-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>WG3064875-4</b>	<b>MS</b>	<b>L2280567-1</b>						
Dissolved Organic Carbon			86.9		%		70-130	31-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653370							
<b>WG3064875-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	31-MAY-19
<b>WG3064875-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>WG3064875-4</b>	<b>MS</b>	<b>L2280567-1</b>						
Total Organic Carbon			89.9		%		70-130	31-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	29-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.7		%		90-110	03-JUN-19
<b>WG3066728-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Fluoride (F)			104.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4655189							
<b>WG3064477-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			103.0		%		80-120	04-JUN-19
<b>WG3064477-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4653516							
<b>WG3065000-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.7		%		80-120	01-JUN-19
<b>WG3065000-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	01-JUN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651500</b>							
<b>WG3062311-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			110.8		%		80-120	30-MAY-19
Antimony (Sb)-Dissolved			99.8		%		80-120	30-MAY-19
Arsenic (As)-Dissolved			107.2		%		80-120	30-MAY-19
Barium (Ba)-Dissolved			109.8		%		80-120	30-MAY-19
Bismuth (Bi)-Dissolved			105.4		%		80-120	30-MAY-19
Boron (B)-Dissolved			104.4		%		80-120	30-MAY-19
Cadmium (Cd)-Dissolved			110.1		%		80-120	30-MAY-19
Calcium (Ca)-Dissolved			105.4		%		80-120	30-MAY-19
Chromium (Cr)-Dissolved			109.6		%		80-120	30-MAY-19
Cobalt (Co)-Dissolved			107.9		%		80-120	30-MAY-19
Copper (Cu)-Dissolved			106.6		%		80-120	30-MAY-19
Iron (Fe)-Dissolved			104.7		%		80-120	30-MAY-19
Lead (Pb)-Dissolved			105.8		%		80-120	30-MAY-19
Lithium (Li)-Dissolved			103.3		%		80-120	30-MAY-19
Magnesium (Mg)-Dissolved			109.2		%		80-120	30-MAY-19
Manganese (Mn)-Dissolved			107.2		%		80-120	30-MAY-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	30-MAY-19
Nickel (Ni)-Dissolved			104.8		%		80-120	30-MAY-19
Potassium (K)-Dissolved			108.2		%		80-120	30-MAY-19
Selenium (Se)-Dissolved			108.5		%		80-120	30-MAY-19
Silicon (Si)-Dissolved			110.6		%		60-140	30-MAY-19
Silver (Ag)-Dissolved			105.4		%		80-120	30-MAY-19
Sodium (Na)-Dissolved			113.6		%		80-120	30-MAY-19
Strontium (Sr)-Dissolved			106.8		%		80-120	30-MAY-19
Thallium (Tl)-Dissolved			104.5		%		80-120	30-MAY-19
Tin (Sn)-Dissolved			102.3		%		80-120	30-MAY-19
Titanium (Ti)-Dissolved			105.9		%		80-120	30-MAY-19
Uranium (U)-Dissolved			108.6		%		80-120	30-MAY-19
Vanadium (V)-Dissolved			110.9		%		80-120	30-MAY-19
Zinc (Zn)-Dissolved			107.9		%		80-120	30-MAY-19
<b>WG3062311-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651500</b>							
<b>WG3062311-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651391</b>							
<b>WG3062303-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			109.1		%		80-120	30-MAY-19
Antimony (Sb)-Total			106.9		%		80-120	30-MAY-19
Arsenic (As)-Total			106.5		%		80-120	30-MAY-19
Barium (Ba)-Total			113.9		%		80-120	30-MAY-19



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4651391</b>							
<b>WG3062303-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			110.6		%		80-120	30-MAY-19
Boron (B)-Total			99.3		%		80-120	30-MAY-19
Cadmium (Cd)-Total			106.7		%		80-120	30-MAY-19
Calcium (Ca)-Total			101.2		%		80-120	30-MAY-19
Chromium (Cr)-Total			109.8		%		80-120	30-MAY-19
Cobalt (Co)-Total			106.0		%		80-120	30-MAY-19
Copper (Cu)-Total			103.8		%		80-120	30-MAY-19
Iron (Fe)-Total			98.8		%		80-120	30-MAY-19
Lead (Pb)-Total			103.5		%		80-120	30-MAY-19
Lithium (Li)-Total			102.6		%		80-120	30-MAY-19
Magnesium (Mg)-Total			105.9		%		80-120	30-MAY-19
Manganese (Mn)-Total			108.9		%		80-120	30-MAY-19
Molybdenum (Mo)-Total			106.4		%		80-120	30-MAY-19
Nickel (Ni)-Total			106.9		%		80-120	30-MAY-19
Potassium (K)-Total			107.5		%		80-120	30-MAY-19
Selenium (Se)-Total			112.9		%		80-120	30-MAY-19
Silicon (Si)-Total			109.6		%		80-120	30-MAY-19
Silver (Ag)-Total			110.2		%		80-120	30-MAY-19
Sodium (Na)-Total			99.4		%		80-120	30-MAY-19
Strontium (Sr)-Total			102.0		%		80-120	30-MAY-19
Thallium (Tl)-Total			104.3		%		80-120	30-MAY-19
Tin (Sn)-Total			104.2		%		80-120	30-MAY-19
Titanium (Ti)-Total			105.5		%		80-120	30-MAY-19
Uranium (U)-Total			102.0		%		80-120	30-MAY-19
Vanadium (V)-Total			107.8		%		80-120	30-MAY-19
Zinc (Zn)-Total			109.2		%		80-120	30-MAY-19
<b>WG3062303-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	30-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	30-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	30-MAY-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	30-MAY-19



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4651391</b>							
<b>WG3062303-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	30-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	30-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	30-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	30-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	30-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	30-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	30-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	30-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	30-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	30-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	30-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	30-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	30-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	30-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	30-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	30-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	30-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	30-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	30-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	30-MAY-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4656091</b>							
<b>WG3067027-6</b>	<b>LCS</b>							
Ammonia as N			95.9		%		85-115	03-JUN-19
<b>WG3067027-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	03-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4650451</b>							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrite (as N)			102.8		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAY-19





## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4655009							
<b>WG3066587-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	03-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4654027							
<b>WG3065686-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.2		%		80-120	31-MAY-19
<b>WG3065686-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	03-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4651439							
<b>WG3062056-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			106.3		%		80-120	29-MAY-19
<b>WG3062056-17</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4654421							
<b>WG3064813-14</b>	<b>LCS</b>							
Total Dissolved Solids			96.6		%		85-115	01-JUN-19
<b>WG3064813-13</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4654421							
<b>WG3064813-13 MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-JUN-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4653955							
<b>WG3065563-11 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	02-JUN-19
<b>WG3065563-14 LCS</b>								
Total Kjeldahl Nitrogen			90.8		%		75-125	02-JUN-19
<b>WG3065563-2 LCS</b>								
Total Kjeldahl Nitrogen			90.9		%		75-125	02-JUN-19
<b>WG3065563-5 LCS</b>								
Total Kjeldahl Nitrogen			91.8		%		75-125	02-JUN-19
<b>WG3065563-8 LCS</b>								
Total Kjeldahl Nitrogen			90.7		%		75-125	02-JUN-19
<b>WG3065563-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-10 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4655806							
<b>WG3066198-2 LCS</b>								
Total Suspended Solids			106.6		%		85-115	03-JUN-19
<b>WG3066198-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4652366							
<b>WG3063857-5 LCS</b>								
Turbidity			97.0		%		85-115	30-MAY-19
<b>WG3063857-4 MB</b>								
Turbidity			<0.10		NTU		0.1	30-MAY-19

# Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2280567

Report Date: 04-JUN-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-MAY-19 09:38	03-JUN-19 14:30	0.25	173	hours	EHTR-FM
pH	1	27-MAY-19 09:38	03-JUN-19 09:00	0.25	167	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2280567 were received on 28-MAY-19 09:15.

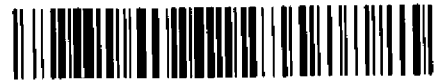
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

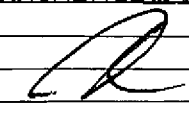
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-03\_2019-05-27**      TURNAROUND TIME:      RUSH?

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS								ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS Package-DOC	ALS Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	Entered / FI Field / Lab / FI Field & Lab / FI
 L2280567-COFC															
RG_DW-01-03_WP_Q2-2019_NP	RG_DW-01-03	WP	N	27-May-19	9:38	G	7	1	1	1	1	1	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				5/28 9:15

<b>SERVICE REQUEST (rush - subject to availability)</b>	Regular (default) <input checked="" type="checkbox"/>	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
					Sampler's Signature		Date/Time	May 27, 2019

OC



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 28-MAY-19  
Report Date: 04-JUN-19 17:04 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2280577  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-07\_2019-05-27  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280577-1 WP 27-MAY-19 10:08 RG_DW-01- 07_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	695			
	Hardness (as CaCO3) (mg/L)	410			
	pH (pH)	8.04			
	ORP (mV)	371			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	468	DLHC		
	Turbidity (NTU)	0.42			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.9			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	302			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	302			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	11.2			
	Fluoride (F) (mg/L)	0.087			
	Ion Balance (%)	109			
	Nitrate (as N) (mg/L)	0.773			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.149			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015			
	Phosphorus (P)-Total (mg/L)	0.0030			
	Sulfate (SO4) (mg/L)	65.7			
	Anion Sum (meq/L)	7.78			
	Cation Sum (meq/L)	8.47			
	Cation - Anion Balance (%)	4.2			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.93			
	Total Organic Carbon (mg/L)	0.88			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00010			
	Barium (Ba)-Total (mg/L)	0.121			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.019			
	Cadmium (Cd)-Total (ug/L)	0.0424			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280577-1 WP 27-MAY-19 10:08 RG_DW-01- 07_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	109			
	Chromium (Cr)-Total (mg/L)	0.00025			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00409			
	Iron (Fe)-Total (mg/L)	0.047			
	Lead (Pb)-Total (mg/L)	0.000157			
	Lithium (Li)-Total (mg/L)	0.0067			
	Magnesium (Mg)-Total (mg/L)	40.8			
	Manganese (Mn)-Total (mg/L)	0.00040			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00403			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.913			
	Selenium (Se)-Total (ug/L)	1.62			
	Silicon (Si)-Total (mg/L)	6.59			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	6.02			
	Strontium (Sr)-Total (mg/L)	0.274			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00172			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0072			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.126			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.017			
	Cadmium (Cd)-Dissolved (ug/L)	0.0374			
	Calcium (Ca)-Dissolved (mg/L)	101			
	Chromium (Cr)-Dissolved (mg/L)	0.00022			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2280577-1 WP 27-MAY-19 10:08 RG_DW-01- 07_WP_Q2- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00193			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000070			
	Lithium (Li)-Dissolved (mg/L)	0.0062			
	Magnesium (Mg)-Dissolved (mg/L)	38.2			
	Manganese (Mn)-Dissolved (mg/L)	0.00012			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00396			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.897			
	Selenium (Se)-Dissolved (ug/L)	2.07			
	Silicon (Si)-Dissolved (mg/L)	6.38			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	6.02			
	Strontium (Sr)-Dissolved (mg/L)	0.290			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00166			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0064			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2280577-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2280577-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2280577-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2280577-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2280577-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L2280577-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2280577-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2280577-1
Matrix Spike	Iron (Fe)-Total	MS-B	L2280577-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2280577-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2280577-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2280577-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			

## Reference Information

<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

01-07\_2019-05-27

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 1 of 12

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4656522							
<b>WG3066693-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.2		%		85-115	03-JUN-19
<b>WG3066693-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	03-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	03-JUN-19
<b>WG3066728-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4651500							
<b>WG3062311-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			104.9		%		80-120	30-MAY-19
<b>WG3062311-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-MAY-19
<b>WG3062311-4</b>	<b>MS</b>	<b>L2280577-1</b>						
Beryllium (Be)-Dissolved			93.6		%		70-130	30-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4653185							
<b>WG3062600-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.2		%		80-120	31-MAY-19
<b>WG3062600-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4653370							
<b>WG3064875-3</b>	<b>DUP</b>	<b>L2280577-1</b>						
Dissolved Organic Carbon		0.93	<0.50	RPD-NA	mg/L	N/A	20	31-MAY-19
<b>WG3064875-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.5		%		80-120	31-MAY-19
<b>WG3064875-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4653370							
WG3064875-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4653370							
WG3064875-3	DUP	L2280577-1						
Total Organic Carbon		0.88	0.59	J	mg/L	0.29	1	31-MAY-19
WG3064875-2	LCS							
Total Organic Carbon			105.5		%		80-120	31-MAY-19
WG3064875-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4650451							
WG3062671-2	LCS							
Chloride (Cl)			99.9		%		90-110	29-MAY-19
WG3062671-1	MB							
Chloride (Cl)			<0.50		mg/L		0.5	29-MAY-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4656666							
WG3066728-14	LCS							
Conductivity (@ 25C)			106.7		%		90-110	03-JUN-19
WG3066728-13	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4650451							
WG3062671-2	LCS							
Fluoride (F)			104.9		%		90-110	29-MAY-19
WG3062671-1	MB							
Fluoride (F)			<0.020		mg/L		0.02	29-MAY-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4655189							
WG3064477-2	LCS							
Mercury (Hg)-Dissolved			103.0		%		80-120	04-JUN-19
WG3064477-1	MB	NP						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653516</b>							
<b>WG3065000-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			104.7		%		80-120	01-JUN-19
<b>WG3065000-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	01-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4651500</b>							
<b>WG3062311-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			110.8		%		80-120	30-MAY-19
Antimony (Sb)-Dissolved			99.8		%		80-120	30-MAY-19
Arsenic (As)-Dissolved			107.2		%		80-120	30-MAY-19
Barium (Ba)-Dissolved			109.8		%		80-120	30-MAY-19
Bismuth (Bi)-Dissolved			105.4		%		80-120	30-MAY-19
Boron (B)-Dissolved			104.4		%		80-120	30-MAY-19
Cadmium (Cd)-Dissolved			110.1		%		80-120	30-MAY-19
Calcium (Ca)-Dissolved			105.4		%		80-120	30-MAY-19
Chromium (Cr)-Dissolved			109.6		%		80-120	30-MAY-19
Cobalt (Co)-Dissolved			107.9		%		80-120	30-MAY-19
Copper (Cu)-Dissolved			106.6		%		80-120	30-MAY-19
Iron (Fe)-Dissolved			104.7		%		80-120	30-MAY-19
Lead (Pb)-Dissolved			105.8		%		80-120	30-MAY-19
Lithium (Li)-Dissolved			103.3		%		80-120	30-MAY-19
Magnesium (Mg)-Dissolved			109.2		%		80-120	30-MAY-19
Manganese (Mn)-Dissolved			107.2		%		80-120	30-MAY-19
Molybdenum (Mo)-Dissolved			104.1		%		80-120	30-MAY-19
Nickel (Ni)-Dissolved			104.8		%		80-120	30-MAY-19
Potassium (K)-Dissolved			108.2		%		80-120	30-MAY-19
Selenium (Se)-Dissolved			108.5		%		80-120	30-MAY-19
Silicon (Si)-Dissolved			110.6		%		60-140	30-MAY-19
Silver (Ag)-Dissolved			105.4		%		80-120	30-MAY-19
Sodium (Na)-Dissolved			113.6		%		80-120	30-MAY-19
Strontium (Sr)-Dissolved			106.8		%		80-120	30-MAY-19
Thallium (Tl)-Dissolved			104.5		%		80-120	30-MAY-19
Tin (Sn)-Dissolved			102.3		%		80-120	30-MAY-19
Titanium (Ti)-Dissolved			105.9		%		80-120	30-MAY-19
Uranium (U)-Dissolved			108.6		%		80-120	30-MAY-19



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651500</b>							
<b>WG3062311-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			110.9		%		80-120	30-MAY-19
Zinc (Zn)-Dissolved			107.9		%		80-120	30-MAY-19
<b>WG3062311-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-MAY-19
<b>WG3062311-4</b>	<b>MS</b>	<b>L2280577-1</b>						
Aluminum (Al)-Dissolved			97.0		%		70-130	30-MAY-19





## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4651500</b>							
<b>WG3062311-4</b>	<b>MS</b>	<b>L2280577-1</b>						
Antimony (Sb)-Dissolved			101.1		%		70-130	30-MAY-19
Arsenic (As)-Dissolved			106.6		%		70-130	30-MAY-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	30-MAY-19
Bismuth (Bi)-Dissolved			90.4		%		70-130	30-MAY-19
Boron (B)-Dissolved			94.6		%		70-130	30-MAY-19
Cadmium (Cd)-Dissolved			98.8		%		70-130	30-MAY-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	30-MAY-19
Chromium (Cr)-Dissolved			95.9		%		70-130	30-MAY-19
Cobalt (Co)-Dissolved			92.2		%		70-130	30-MAY-19
Copper (Cu)-Dissolved			89.7		%		70-130	30-MAY-19
Iron (Fe)-Dissolved			95.8		%		70-130	30-MAY-19
Lead (Pb)-Dissolved			95.5		%		70-130	30-MAY-19
Lithium (Li)-Dissolved			92.5		%		70-130	30-MAY-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	30-MAY-19
Manganese (Mn)-Dissolved			97.4		%		70-130	30-MAY-19
Molybdenum (Mo)-Dissolved			102.0		%		70-130	30-MAY-19
Nickel (Ni)-Dissolved			89.5		%		70-130	30-MAY-19
Potassium (K)-Dissolved			95.8		%		70-130	30-MAY-19
Selenium (Se)-Dissolved			108.5		%		70-130	30-MAY-19
Silicon (Si)-Dissolved			88.2		%		70-130	30-MAY-19
Silver (Ag)-Dissolved			99.0		%		70-130	30-MAY-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	30-MAY-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	30-MAY-19
Thallium (Tl)-Dissolved			94.1		%		70-130	30-MAY-19
Tin (Sn)-Dissolved			99.4		%		70-130	30-MAY-19
Titanium (Ti)-Dissolved			98.8		%		70-130	30-MAY-19
Uranium (U)-Dissolved			96.2		%		70-130	30-MAY-19
Vanadium (V)-Dissolved			99.0		%		70-130	30-MAY-19
Zinc (Zn)-Dissolved			96.7		%		70-130	30-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653185</b>							
<b>WG3062600-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			104.2		%		80-120	31-MAY-19
Antimony (Sb)-Total			106.8		%		80-120	31-MAY-19



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653185</b>							
<b>WG3062600-2</b>	<b>LCS</b>							
Arsenic (As)-Total			98.1		%		80-120	31-MAY-19
Barium (Ba)-Total			105.8		%		80-120	31-MAY-19
Bismuth (Bi)-Total			99.5		%		80-120	31-MAY-19
Boron (B)-Total			97.3		%		80-120	31-MAY-19
Cadmium (Cd)-Total			103.8		%		80-120	31-MAY-19
Calcium (Ca)-Total			97.4		%		80-120	31-MAY-19
Chromium (Cr)-Total			102.0		%		80-120	31-MAY-19
Cobalt (Co)-Total			102.0		%		80-120	31-MAY-19
Copper (Cu)-Total			101.1		%		80-120	31-MAY-19
Iron (Fe)-Total			97.2		%		80-120	31-MAY-19
Lead (Pb)-Total			100.9		%		80-120	31-MAY-19
Lithium (Li)-Total			97.1		%		80-120	31-MAY-19
Magnesium (Mg)-Total			105.0		%		80-120	31-MAY-19
Manganese (Mn)-Total			104.1		%		80-120	31-MAY-19
Molybdenum (Mo)-Total			102.3		%		80-120	31-MAY-19
Nickel (Ni)-Total			102.0		%		80-120	31-MAY-19
Potassium (K)-Total			100.6		%		80-120	31-MAY-19
Selenium (Se)-Total			99.1		%		80-120	31-MAY-19
Silicon (Si)-Total			103.0		%		80-120	31-MAY-19
Silver (Ag)-Total			101.9		%		80-120	31-MAY-19
Sodium (Na)-Total			105.1		%		80-120	31-MAY-19
Strontium (Sr)-Total			96.3		%		80-120	31-MAY-19
Thallium (Tl)-Total			103.2		%		80-120	31-MAY-19
Tin (Sn)-Total			98.3		%		80-120	31-MAY-19
Titanium (Ti)-Total			102.7		%		80-120	31-MAY-19
Uranium (U)-Total			105.4		%		80-120	31-MAY-19
Vanadium (V)-Total			103.4		%		80-120	31-MAY-19
Zinc (Zn)-Total			101.8		%		80-120	31-MAY-19
<b>WG3062600-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-MAY-19



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653185</b>							
<b>WG3062600-1</b>	<b>MB</b>							
Boron (B)-Total			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-MAY-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4656091</b>							
<b>WG3067027-10</b>	<b>LCS</b>							
Ammonia as N			94.8		%		85-115	03-JUN-19
<b>WG3067027-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	03-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-1 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4654421							
<b>WG3064813-14 LCS</b>								
Total Dissolved Solids			96.6		%		85-115	01-JUN-19
<b>WG3064813-13 MB</b>								
Total Dissolved Solids			<10		mg/L		10	01-JUN-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4653955							
<b>WG3065563-11 LCS</b>								
Total Kjeldahl Nitrogen			92.0		%		75-125	02-JUN-19
<b>WG3065563-14 LCS</b>								
Total Kjeldahl Nitrogen			90.8		%		75-125	02-JUN-19
<b>WG3065563-2 LCS</b>								
Total Kjeldahl Nitrogen			90.9		%		75-125	02-JUN-19
<b>WG3065563-5 LCS</b>								
Total Kjeldahl Nitrogen			91.8		%		75-125	02-JUN-19
<b>WG3065563-8 LCS</b>								
Total Kjeldahl Nitrogen			90.7		%		75-125	02-JUN-19
<b>WG3065563-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-10 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>WG3065563-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4655806							
<b>WG3066198-2 LCS</b>								
Total Suspended Solids			106.6		%		85-115	03-JUN-19
<b>WG3066198-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-19
<b>TURBIDITY-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TURBIDITY-CL</b>	<b>Water</b>							
<b>Batch</b>	<b>R4652366</b>							
<b>WG3063857-5</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	30-MAY-19
<b>WG3063857-4</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	30-MAY-19

# Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2280577

Report Date: 04-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-MAY-19 10:08	03-JUN-19 14:30	0.25	172	hours	EHTR-FM
pH	1	27-MAY-19 10:08	03-JUN-19 09:00	0.25	167	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2280577 were received on 28-MAY-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



<b>COC ID:</b> 01-07_2019-05-27		<b>TURNAROUND TIME:</b>			<b>RUSH:</b>							
<b>PROJECT/CLIENT INFO</b>				<b>LABORATORY</b>			<b>OTHER INFO</b>					
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewer@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS								ANALYSIS REQUESTED						
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-01-07_WP_Q2-2019_NP	RG_DW-01-07	WP	N	27-May-19	10:08	G	7	1	1	1	1	1	1	1

<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	5/28 9:45

<b>SERVICE REQUEST (rush - subject to availability):</b>	Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS
<b>Sampler's Name</b>	Jennifer de Werk		<b>Mobile #</b>	250-910-7287
<b>Sampler's Signature</b>	<i>[Signature]</i>		<b>Date/Time</b>	May 27, 2019

8c



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 28-MAY-19  
Report Date: 04-JUN-19 16:57 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2280620  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 02-20\_2019-05-27  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280620-1 WP 27-MAY-19 10:49 RG_DW-02- 20_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	504			
	Hardness (as CaCO3) (mg/L)	257			
	pH (pH)	8.36			
	ORP (mV)	426			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	311	DLHC		
	Turbidity (NTU)	0.84			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	166			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	2.4			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	168			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	3.22			
	Fluoride (F) (mg/L)	0.181			
	Ion Balance (%)	96.1			
	Nitrate (as N) (mg/L)	2.99			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.121	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	0.0015			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	87.0			
	Anion Sum (meq/L)	5.48			
	Cation Sum (meq/L)	5.27			
	Cation - Anion Balance (%)	-2.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0933			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0077			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280620-1 WP 27-MAY-19 10:49 RG_DW-02- 20_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	69.3			
	Chromium (Cr)-Total (mg/L)	0.00023			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00270			
	Iron (Fe)-Total (mg/L)	0.080			
	Lead (Pb)-Total (mg/L)	0.000134			
	Lithium (Li)-Total (mg/L)	0.0066			
	Magnesium (Mg)-Total (mg/L)	21.6			
	Manganese (Mn)-Total (mg/L)	0.00204			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00106			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.587			
	Selenium (Se)-Total (ug/L)	13.7			
	Silicon (Si)-Total (mg/L)	2.45			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.76			
	Strontium (Sr)-Total (mg/L)	0.246			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00114			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0061			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0894			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0094			
	Calcium (Ca)-Dissolved (mg/L)	69.4			
	Chromium (Cr)-Dissolved (mg/L)	0.00018			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2280620-1 WP 27-MAY-19 10:49 RG_DW-02- 20_WP_Q2- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00213			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0070			
	Magnesium (Mg)-Dissolved (mg/L)	20.3			
	Manganese (Mn)-Dissolved (mg/L)	0.00182			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000972			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.629			
	Selenium (Se)-Dissolved (ug/L)	14.5			
	Silicon (Si)-Dissolved (mg/L)	2.29			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.82			
	Strontium (Sr)-Dissolved (mg/L)	0.245			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00109			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0056			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2280620-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2280620-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2280620-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2280620-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2280620-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2280620-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2280620-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2280620-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2280620-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

02-20\_2019-05-27

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4656522							
<b>WG3066693-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			104.2		%		85-115	03-JUN-19
<b>WG3066693-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.0		mg/L		2	03-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.9		%		85-115	03-JUN-19
<b>WG3066728-13</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	03-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4652862							
<b>WG3063547-3</b>	<b>DUP</b>	<b>L2280620-1</b>						
Beryllium (Be)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	31-MAY-19
<b>WG3063547-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			106.4		%		80-120	31-MAY-19
<b>WG3063547-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4653185							
<b>WG3063362-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			95.1		%		80-120	31-MAY-19
<b>WG3063362-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	31-MAY-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Bromide (Br)			101.3		%		85-115	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4653370							
<b>WG3064875-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.5		%		80-120	31-MAY-19
<b>WG3064875-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653370							
<b>WG3064875-2</b>	<b>LCS</b>							
Total Organic Carbon			105.5		%		80-120	31-MAY-19
<b>WG3064875-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Chloride (Cl)			99.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	29-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
Conductivity (@ 25C)			106.7		%		90-110	03-JUN-19
<b>WG3066728-13</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	03-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Fluoride (F)			104.9		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4653301							
<b>WG3063459-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			104.1		%		80-120	01-JUN-19
<b>WG3063459-5</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	01-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4653713							
<b>WG3065236-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			101.7		%		80-120	02-JUN-19
<b>WG3065236-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	02-JUN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4652862</b>							
<b>WG3063547-3</b>	<b>DUP</b>	<b>L2280620-1</b>						
Aluminum (Al)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	31-MAY-19
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAY-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAY-19
Barium (Ba)-Dissolved		0.0894	0.0977		mg/L	8.9	20	31-MAY-19
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAY-19
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAY-19
Cadmium (Cd)-Dissolved		0.0000094	0.0000076	J	mg/L	0.000001	0.00001	31-MAY-19
Calcium (Ca)-Dissolved		69.4	67.8		mg/L	2.4	20	31-MAY-19
Chromium (Cr)-Dissolved		0.00018	0.00019		mg/L	6.7	20	31-MAY-19
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAY-19
Copper (Cu)-Dissolved		0.00213	0.00224		mg/L	5.2	20	31-MAY-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAY-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	31-MAY-19
Lithium (Li)-Dissolved		0.0070	0.0069		mg/L	1.8	20	31-MAY-19
Magnesium (Mg)-Dissolved		20.3	21.6		mg/L	6.5	20	31-MAY-19
Manganese (Mn)-Dissolved		0.00182	0.00174		mg/L	4.4	20	31-MAY-19
Molybdenum (Mo)-Dissolved		0.000972	0.00101		mg/L	4.2	20	31-MAY-19
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-MAY-19
Potassium (K)-Dissolved		0.629	0.654		mg/L	3.9	20	31-MAY-19
Selenium (Se)-Dissolved		0.0145	0.0145		mg/L	0.4	20	31-MAY-19
Silicon (Si)-Dissolved		2.29	2.41		mg/L	5.1	20	31-MAY-19
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-MAY-19
Sodium (Na)-Dissolved		2.82	2.84		mg/L	0.4	20	31-MAY-19
Strontium (Sr)-Dissolved		0.245	0.255		mg/L	3.8	20	31-MAY-19
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	31-MAY-19
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	31-MAY-19
Titanium (Ti)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	31-MAY-19
Uranium (U)-Dissolved		0.00109	0.00109		mg/L	0.5	20	31-MAY-19
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	31-MAY-19
Zinc (Zn)-Dissolved		0.0056	0.0061		mg/L	8.8	20	31-MAY-19
<b>WG3063547-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			106.8		%		80-120	31-MAY-19
Antimony (Sb)-Dissolved			99.9		%		80-120	31-MAY-19
Arsenic (As)-Dissolved			103.8		%		80-120	31-MAY-19



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4652862</b>							
<b>WG3063547-2</b>	<b>LCS</b>							
Barium (Ba)-Dissolved			100.2		%		80-120	31-MAY-19
Bismuth (Bi)-Dissolved			103.6		%		80-120	31-MAY-19
Boron (B)-Dissolved			102.6		%		80-120	31-MAY-19
Cadmium (Cd)-Dissolved			105.4		%		80-120	31-MAY-19
Calcium (Ca)-Dissolved			102.0		%		80-120	31-MAY-19
Chromium (Cr)-Dissolved			104.2		%		80-120	31-MAY-19
Cobalt (Co)-Dissolved			105.3		%		80-120	31-MAY-19
Copper (Cu)-Dissolved			102.8		%		80-120	31-MAY-19
Iron (Fe)-Dissolved			104.8		%		80-120	31-MAY-19
Lead (Pb)-Dissolved			105.3		%		80-120	31-MAY-19
Lithium (Li)-Dissolved			103.6		%		80-120	31-MAY-19
Magnesium (Mg)-Dissolved			102.2		%		80-120	31-MAY-19
Manganese (Mn)-Dissolved			108.7		%		80-120	31-MAY-19
Molybdenum (Mo)-Dissolved			104.0		%		80-120	31-MAY-19
Nickel (Ni)-Dissolved			105.5		%		80-120	31-MAY-19
Potassium (K)-Dissolved			105.0		%		80-120	31-MAY-19
Selenium (Se)-Dissolved			98.7		%		80-120	31-MAY-19
Silicon (Si)-Dissolved			103.8		%		60-140	31-MAY-19
Silver (Ag)-Dissolved			103.1		%		80-120	31-MAY-19
Sodium (Na)-Dissolved			105.8		%		80-120	31-MAY-19
Strontium (Sr)-Dissolved			105.2		%		80-120	31-MAY-19
Thallium (Tl)-Dissolved			107.9		%		80-120	31-MAY-19
Tin (Sn)-Dissolved			100.8		%		80-120	31-MAY-19
Titanium (Ti)-Dissolved			100.4		%		80-120	31-MAY-19
Uranium (U)-Dissolved			106.9		%		80-120	31-MAY-19
Vanadium (V)-Dissolved			105.8		%		80-120	31-MAY-19
Zinc (Zn)-Dissolved			107.7		%		80-120	31-MAY-19
<b>WG3063547-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAY-19



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4652862</b>							
<b>WG3063547-1</b>	<b>MB</b>	<b>NP</b>						
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			100.9		%		80-120	31-MAY-19
Antimony (Sb)-Total			113.0		%		80-120	31-MAY-19
Arsenic (As)-Total			102.9		%		80-120	31-MAY-19
Barium (Ba)-Total			108.6		%		80-120	31-MAY-19
Bismuth (Bi)-Total			107.8		%		80-120	31-MAY-19
Boron (B)-Total			93.2		%		80-120	31-MAY-19
Cadmium (Cd)-Total			104.2		%		80-120	31-MAY-19



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-2</b>	<b>LCS</b>							
Calcium (Ca)-Total			98.0		%		80-120	31-MAY-19
Chromium (Cr)-Total			103.0		%		80-120	31-MAY-19
Cobalt (Co)-Total			103.9		%		80-120	31-MAY-19
Copper (Cu)-Total			102.2		%		80-120	31-MAY-19
Iron (Fe)-Total			95.4		%		80-120	31-MAY-19
Lead (Pb)-Total			105.8		%		80-120	31-MAY-19
Lithium (Li)-Total			94.1		%		80-120	31-MAY-19
Magnesium (Mg)-Total			102.7		%		80-120	31-MAY-19
Manganese (Mn)-Total			103.5		%		80-120	31-MAY-19
Molybdenum (Mo)-Total			102.3		%		80-120	31-MAY-19
Nickel (Ni)-Total			103.8		%		80-120	31-MAY-19
Potassium (K)-Total			102.6		%		80-120	31-MAY-19
Selenium (Se)-Total			99.9		%		80-120	31-MAY-19
Silicon (Si)-Total			107.1		%		80-120	31-MAY-19
Silver (Ag)-Total			102.8		%		80-120	31-MAY-19
Sodium (Na)-Total			106.3		%		80-120	31-MAY-19
Strontium (Sr)-Total			97.9		%		80-120	31-MAY-19
Thallium (Tl)-Total			108.2		%		80-120	31-MAY-19
Tin (Sn)-Total			99.7		%		80-120	31-MAY-19
Titanium (Ti)-Total			104.1		%		80-120	31-MAY-19
Uranium (U)-Total			105.5		%		80-120	31-MAY-19
Vanadium (V)-Total			103.2		%		80-120	31-MAY-19
Zinc (Zn)-Total			105.0		%		80-120	31-MAY-19
<b>WG3063362-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-MAY-19



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653185</b>							
<b>WG3063362-1</b>	<b>MB</b>							
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	31-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-MAY-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4656091</b>							
<b>WG3067027-10</b>	<b>LCS</b>							
Ammonia as N			94.8		%		85-115	03-JUN-19
<b>WG3067027-9</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	03-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4650451</b>							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrite (as N)			102.8		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-MAY-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Nitrate (as N)			100.0		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4655009							
<b>WG3066587-7</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			221		mV		210-230	03-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4654027							
<b>WG3065686-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.2		%		80-120	31-MAY-19
<b>WG3065686-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	31-MAY-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4656666							
<b>WG3066728-14</b>	<b>LCS</b>							
pH			6.99		pH		6.9-7.1	03-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4651439							
<b>WG3062056-18</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			106.3		%		80-120	29-MAY-19
<b>WG3062056-17</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4650451							
<b>WG3062671-2</b>	<b>LCS</b>							
Sulfate (SO4)			100.7		%		90-110	29-MAY-19
<b>WG3062671-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4654421							
<b>WG3064813-14</b>	<b>LCS</b>							
Total Dissolved Solids			96.6		%		85-115	01-JUN-19
<b>WG3064813-13</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch R4654421								
WG3064813-13 MB								
Total Dissolved Solids			<10		mg/L		10	01-JUN-19
<b>TKN-L-F-CL</b>								
<b>Water</b>								
Batch R4653955								
WG3065563-11 LCS								
Total Kjeldahl Nitrogen			92.0		%		75-125	02-JUN-19
WG3065563-14 LCS								
Total Kjeldahl Nitrogen			90.8		%		75-125	02-JUN-19
WG3065563-2 LCS								
Total Kjeldahl Nitrogen			90.9		%		75-125	02-JUN-19
WG3065563-5 LCS								
Total Kjeldahl Nitrogen			91.8		%		75-125	02-JUN-19
WG3065563-8 LCS								
Total Kjeldahl Nitrogen			90.7		%		75-125	02-JUN-19
WG3065563-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
WG3065563-10 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
WG3065563-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
WG3065563-4 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
WG3065563-7 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	02-JUN-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch R4655806								
WG3066198-5 LCS								
Total Suspended Solids			104.0		%		85-115	03-JUN-19
WG3066198-4 MB								
Total Suspended Solids			<1.0		mg/L		1	03-JUN-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch R4652366								
WG3063857-8 LCS								
Turbidity			99.5		%		85-115	30-MAY-19
WG3063857-7 MB								
Turbidity			<0.10		NTU		0.1	30-MAY-19

# Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2280620

Report Date: 04-JUN-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	27-MAY-19 10:49	03-JUN-19 14:30	0.25	172	hours	EHTR-FM
pH	1	27-MAY-19 10:49	03-JUN-19 09:00	0.25	166	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2280620 were received on 28-MAY-19 09:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-20\_2019-05-27**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered by Field, Lab, Field & Lab

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	ALS Package-DOC	ALS Package-TRN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-02-20_WP_Q2-2019_NP	RG_DW-02-20	WP	N	27-May-19	10:49	G	7	1	1	1	1	1	1	1



L2280620-COFC

010

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*[Signature]*  
5/28 9:15

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

Jennifer de Werk

Mobile #

250-910-7287

Sampler's Signature

*[Signature]*

Date/Time

May 27, 2019

80  
JC



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 29-MAY-19  
Report Date: 06-JUN-19 15:48 (MT)  
Version: FINAL

Client Phone: 250-868-5289

## Certificate of Analysis

Lab Work Order #: L2281732  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-01\_2019-05-28  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2281732-1 WP 28-MAY-19 10:52 RG_DW-03-01_WP_Q2-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	840			
	Hardness (as CaCO3) (mg/L)	437			
	pH (pH)	8.29			
	ORP (mV)	351			
	Total Suspended Solids (mg/L)	1.2			
	Total Dissolved Solids (mg/L)	474	DLHC		
	Turbidity (NTU)	2.34			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.2			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	337			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	340			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	0.108			
	Chloride (Cl) (mg/L)	35.9			
	Fluoride (F) (mg/L)	0.179			
	Ion Balance (%)	101			
	Nitrate (as N) (mg/L)	0.0140			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.067			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	76.6			
	Anion Sum (meq/L)	9.41			
	Cation Sum (meq/L)	9.49			
	Cation - Anion Balance (%)	0.4			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.40			
	Total Organic Carbon (mg/L)	1.30			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00011			
	Barium (Ba)-Total (mg/L)	0.121			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.046			
	Cadmium (Cd)-Total (ug/L)	0.0833			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2281732-1 WP 28-MAY-19 10:52 RG_DW-03-01_WP_Q2-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	109			
	Chromium (Cr)-Total (mg/L)	0.00011			
	Cobalt (Co)-Total (ug/L)	0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	0.510			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0223			
	Magnesium (Mg)-Total (mg/L)	32.9			
	Manganese (Mn)-Total (mg/L)	0.160			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00281			
	Nickel (Ni)-Total (mg/L)	0.00293			
	Potassium (K)-Total (mg/L)	2.00			
	Selenium (Se)-Total (ug/L)	0.106			
	Silicon (Si)-Total (mg/L)	4.83			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	14.4			
	Strontium (Sr)-Total (mg/L)	0.400			
	Thallium (Tl)-Total (mg/L)	0.000109			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00106			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.124			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.041			
	Cadmium (Cd)-Dissolved (ug/L)	0.0911			
	Calcium (Ca)-Dissolved (mg/L)	114			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2281732-1	WP	28-MAY-19	10:52	RG_DW-03-01_WP_Q2-2019_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)					<0.00050
	Iron (Fe)-Dissolved (mg/L)					0.074
	Lead (Pb)-Dissolved (mg/L)					<0.000050
	Lithium (Li)-Dissolved (mg/L)					0.0204
	Magnesium (Mg)-Dissolved (mg/L)					36.9
	Manganese (Mn)-Dissolved (mg/L)					0.159
	Mercury (Hg)-Dissolved (mg/L)					<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)					0.00293
	Nickel (Ni)-Dissolved (mg/L)					0.00304
	Potassium (K)-Dissolved (mg/L)					2.14
	Selenium (Se)-Dissolved (ug/L)					0.102
	Silicon (Si)-Dissolved (mg/L)					4.83
	Silver (Ag)-Dissolved (mg/L)					<0.000010
	Sodium (Na)-Dissolved (mg/L)					16.0
	Strontium (Sr)-Dissolved (mg/L)					0.410
	Thallium (Tl)-Dissolved (mg/L)					0.000089
	Tin (Sn)-Dissolved (mg/L)					<0.00010
	Titanium (Ti)-Dissolved (mg/L)					<0.010
	Uranium (U)-Dissolved (mg/L)					0.000961
	Vanadium (V)-Dissolved (mg/L)					<0.00050
	Zinc (Zn)-Dissolved (mg/L)					0.0015

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2281732-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2281732-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2281732-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2281732-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2281732-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2281732-1
Matrix Spike	Ammonia as N	MS-B	L2281732-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			

## Reference Information

electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**      Water      Total Dissolved Solids      APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**      Water      Ion Balance Calculation      APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**      Water      Total Kjeldahl Nitrogen      APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**      Water      Total Suspended Solids      APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**      Water      Turbidity      APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

03-01\_2019-05-28

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 1 of 12

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4659132							
<b>WG3068025-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	04-JUN-19
<b>WG3068025-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	04-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.3		%		85-115	05-JUN-19
<b>WG3068525-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4653601							
<b>WG3064723-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.0		%		80-120	31-MAY-19
<b>WG3064723-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-MAY-19
<b>WG3064723-4</b>	<b>MS</b>	<b>L2281732-1</b>						
Beryllium (Be)-Dissolved			95.4		%		70-130	31-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4654145							
<b>WG3064717-3</b>	<b>DUP</b>	<b>L2281732-1</b>						
Beryllium (Be)-Total		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3064717-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.2		%		80-120	01-JUN-19
<b>WG3064717-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Bromide (Br)			98.8		%		85-115	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4653355							
<b>WG3064856-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.4		%		80-120	31-MAY-19
<b>WG3064856-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 2 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-DIS-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653355							
<b>WG3064856-9 MB</b>								
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653355							
<b>WG3064856-10 LCS</b>								
Total Organic Carbon			98.1		%		80-120	31-MAY-19
<b>WG3064856-9 MB</b>								
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2 LCS</b>								
Chloride (Cl)			98.8		%		90-110	30-MAY-19
<b>WG3068173-1 MB</b>								
Chloride (Cl)			<0.50		mg/L		0.5	30-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8 LCS</b>								
Conductivity (@ 25C)			100.8		%		90-110	05-JUN-19
<b>WG3068525-7 MB</b>								
Conductivity (@ 25C)			<2.0		uS/cm		2	05-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2 LCS</b>								
Fluoride (F)			103.5		%		90-110	30-MAY-19
<b>WG3068173-1 MB</b>								
Fluoride (F)			<0.020		mg/L		0.02	30-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4655189							
<b>WG3066173-2 LCS</b>								
Mercury (Hg)-Dissolved			102.6		%		80-120	04-JUN-19
<b>WG3066173-1 MB</b>		<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>WG3066173-4 MS</b>		<b>L2281732-1</b>						
Mercury (Hg)-Dissolved			95.2		%		70-130	04-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 3 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4655189</b>							
<b>WG3066569-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.2		%		80-120	04-JUN-19
<b>WG3066569-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-JUN-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064723-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.6		%		80-120	31-MAY-19
Antimony (Sb)-Dissolved			91.7		%		80-120	31-MAY-19
Arsenic (As)-Dissolved			94.9		%		80-120	31-MAY-19
Barium (Ba)-Dissolved			93.2		%		80-120	31-MAY-19
Bismuth (Bi)-Dissolved			95.3		%		80-120	31-MAY-19
Boron (B)-Dissolved			91.8		%		80-120	31-MAY-19
Cadmium (Cd)-Dissolved			97.7		%		80-120	31-MAY-19
Calcium (Ca)-Dissolved			95.5		%		80-120	31-MAY-19
Chromium (Cr)-Dissolved			95.7		%		80-120	31-MAY-19
Cobalt (Co)-Dissolved			93.7		%		80-120	31-MAY-19
Copper (Cu)-Dissolved			95.9		%		80-120	31-MAY-19
Iron (Fe)-Dissolved			91.0		%		80-120	31-MAY-19
Lead (Pb)-Dissolved			93.3		%		80-120	31-MAY-19
Lithium (Li)-Dissolved			92.7		%		80-120	31-MAY-19
Magnesium (Mg)-Dissolved			94.6		%		80-120	31-MAY-19
Manganese (Mn)-Dissolved			92.9		%		80-120	31-MAY-19
Molybdenum (Mo)-Dissolved			95.3		%		80-120	31-MAY-19
Nickel (Ni)-Dissolved			96.8		%		80-120	31-MAY-19
Potassium (K)-Dissolved			94.0		%		80-120	31-MAY-19
Selenium (Se)-Dissolved			98.8		%		80-120	31-MAY-19
Silicon (Si)-Dissolved			97.3		%		60-140	31-MAY-19
Silver (Ag)-Dissolved			90.9		%		80-120	31-MAY-19
Sodium (Na)-Dissolved			97.1		%		80-120	31-MAY-19
Strontium (Sr)-Dissolved			92.1		%		80-120	31-MAY-19
Thallium (Tl)-Dissolved			94.5		%		80-120	31-MAY-19
Tin (Sn)-Dissolved			92.8		%		80-120	31-MAY-19
Titanium (Ti)-Dissolved			91.5		%		80-120	31-MAY-19
Uranium (U)-Dissolved			90.1		%		80-120	31-MAY-19



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 4 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064723-2</b>	<b>LCS</b>							
Vanadium (V)-Dissolved			95.3		%		80-120	31-MAY-19
Zinc (Zn)-Dissolved			93.2		%		80-120	31-MAY-19
<b>WG3064723-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
<b>WG3064723-4</b>	<b>MS</b>	<b>L2281732-1</b>						
Aluminum (Al)-Dissolved			91.7		%		70-130	31-MAY-19



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 5 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064723-4</b>	<b>MS</b>	<b>L2281732-1</b>						
Antimony (Sb)-Dissolved			92.0		%		70-130	31-MAY-19
Arsenic (As)-Dissolved			96.8		%		70-130	31-MAY-19
Barium (Ba)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Bismuth (Bi)-Dissolved			79.3		%		70-130	31-MAY-19
Boron (B)-Dissolved			92.7		%		70-130	31-MAY-19
Cadmium (Cd)-Dissolved			95.8		%		70-130	31-MAY-19
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Chromium (Cr)-Dissolved			91.1		%		70-130	31-MAY-19
Cobalt (Co)-Dissolved			88.0		%		70-130	31-MAY-19
Copper (Cu)-Dissolved			89.5		%		70-130	31-MAY-19
Iron (Fe)-Dissolved			88.5		%		70-130	31-MAY-19
Lead (Pb)-Dissolved			88.0		%		70-130	31-MAY-19
Lithium (Li)-Dissolved			95.2		%		70-130	31-MAY-19
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Molybdenum (Mo)-Dissolved			95.9		%		70-130	31-MAY-19
Nickel (Ni)-Dissolved			89.4		%		70-130	31-MAY-19
Potassium (K)-Dissolved			88.2		%		70-130	31-MAY-19
Selenium (Se)-Dissolved			99.6		%		70-130	31-MAY-19
Silicon (Si)-Dissolved			85.3		%		70-130	31-MAY-19
Silver (Ag)-Dissolved			91.4		%		70-130	31-MAY-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	31-MAY-19
Thallium (Tl)-Dissolved			88.9		%		70-130	31-MAY-19
Tin (Sn)-Dissolved			92.7		%		70-130	31-MAY-19
Titanium (Ti)-Dissolved			94.1		%		70-130	31-MAY-19
Uranium (U)-Dissolved			88.5		%		70-130	31-MAY-19
Vanadium (V)-Dissolved			94.0		%		70-130	31-MAY-19
Zinc (Zn)-Dissolved			90.0		%		70-130	31-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-3</b>	<b>DUP</b>	<b>L2281732-1</b>						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-JUN-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-JUN-19





## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 6 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-3</b>	<b>DUP</b>	<b>L2281732-1</b>						
Arsenic (As)-Total		0.00011	0.00011		mg/L	3.4	20	01-JUN-19
Barium (Ba)-Total		0.121	0.130		mg/L	7.1	20	01-JUN-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-JUN-19
Boron (B)-Total		0.046	0.047		mg/L	1.7	20	01-JUN-19
Cadmium (Cd)-Total		0.0000833	0.0000978		mg/L	16	20	01-JUN-19
Calcium (Ca)-Total		109	114		mg/L	5.0	20	01-JUN-19
Chromium (Cr)-Total		0.00011	<0.00010	RPD-NA	mg/L	N/A	20	01-JUN-19
Cobalt (Co)-Total		0.00010	0.00012		mg/L	17	20	01-JUN-19
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-JUN-19
Iron (Fe)-Total		0.510	0.535		mg/L	5.0	20	01-JUN-19
Lead (Pb)-Total		<0.000050	0.000054	RPD-NA	mg/L	N/A	20	01-JUN-19
Lithium (Li)-Total		0.0223	0.0227		mg/L	1.8	20	01-JUN-19
Magnesium (Mg)-Total		32.9	34.2		mg/L	3.9	20	01-JUN-19
Manganese (Mn)-Total		0.160	0.169		mg/L	5.4	20	01-JUN-19
Molybdenum (Mo)-Total		0.00281	0.00295		mg/L	4.8	20	01-JUN-19
Nickel (Ni)-Total		0.00293	0.00321		mg/L	8.9	20	01-JUN-19
Potassium (K)-Total		2.00	2.07		mg/L	3.5	20	01-JUN-19
Selenium (Se)-Total		0.000106	0.000101		mg/L	4.7	20	01-JUN-19
Silicon (Si)-Total		4.83	5.04		mg/L	4.2	20	01-JUN-19
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-JUN-19
Sodium (Na)-Total		14.4	14.8		mg/L	3.0	20	01-JUN-19
Strontium (Sr)-Total		0.400	0.414		mg/L	3.5	20	01-JUN-19
Thallium (Tl)-Total		0.000109	0.000114		mg/L	4.0	20	01-JUN-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-JUN-19
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-JUN-19
Uranium (U)-Total		0.00106	0.00113		mg/L	6.3	20	01-JUN-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-JUN-19
Zinc (Zn)-Total		<0.0030	0.0030	RPD-NA	mg/L	N/A	20	01-JUN-19
<b>WG3064717-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			101.2		%		80-120	01-JUN-19
Antimony (Sb)-Total			105.6		%		80-120	01-JUN-19
Arsenic (As)-Total			97.7		%		80-120	01-JUN-19
Barium (Ba)-Total			106.8		%		80-120	01-JUN-19
Bismuth (Bi)-Total			98.4		%		80-120	01-JUN-19



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 7 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-2</b>	<b>LCS</b>							
Boron (B)-Total			98.7		%		80-120	01-JUN-19
Cadmium (Cd)-Total			101.6		%		80-120	01-JUN-19
Calcium (Ca)-Total			98.1		%		80-120	01-JUN-19
Chromium (Cr)-Total			104.4		%		80-120	01-JUN-19
Cobalt (Co)-Total			101.2		%		80-120	01-JUN-19
Copper (Cu)-Total			99.2		%		80-120	01-JUN-19
Iron (Fe)-Total			99.3		%		80-120	01-JUN-19
Lead (Pb)-Total			99.5		%		80-120	01-JUN-19
Lithium (Li)-Total			98.5		%		80-120	01-JUN-19
Magnesium (Mg)-Total			97.9		%		80-120	01-JUN-19
Manganese (Mn)-Total			104.4		%		80-120	01-JUN-19
Molybdenum (Mo)-Total			101.4		%		80-120	01-JUN-19
Nickel (Ni)-Total			99.9		%		80-120	01-JUN-19
Potassium (K)-Total			100.8		%		80-120	01-JUN-19
Selenium (Se)-Total			99.3		%		80-120	01-JUN-19
Silicon (Si)-Total			101.0		%		80-120	01-JUN-19
Silver (Ag)-Total			98.6		%		80-120	01-JUN-19
Sodium (Na)-Total			104.7		%		80-120	01-JUN-19
Strontium (Sr)-Total			99.8		%		80-120	01-JUN-19
Thallium (Tl)-Total			100.0		%		80-120	01-JUN-19
Tin (Sn)-Total			101.0		%		80-120	01-JUN-19
Titanium (Ti)-Total			99.7		%		80-120	01-JUN-19
Uranium (U)-Total			98.2		%		80-120	01-JUN-19
Vanadium (V)-Total			101.7		%		80-120	01-JUN-19
Zinc (Zn)-Total			103.8		%		80-120	01-JUN-19
<b>WG3064717-1</b>		<b>MB</b>						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	01-JUN-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	01-JUN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-JUN-19



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 8 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-1</b>	<b>MB</b>							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-JUN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-JUN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-JUN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-JUN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-JUN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-JUN-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4659385</b>							
<b>WG3068375-6</b>	<b>LCS</b>							
Ammonia as N			97.0		%		85-115	04-JUN-19
<b>WG3068375-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4658949</b>							
<b>WG3068173-2</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-MAY-19
<b>NO3-L-IC-N-CL</b>		<b>Water</b>						



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 9 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Nitrate (as N)			98.9		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4659356							
<b>WG3068582-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	05-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4658959							
<b>WG3067258-41</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.4		%		80-120	04-JUN-19
<b>WG3067258-10</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	05-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4653118							
<b>WG3064405-14</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.6		%		80-120	31-MAY-19
<b>WG3064405-13</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.8		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4659028							
<b>WG3065518-23</b>	<b>LCS</b>							
Total Dissolved Solids			93.6		%		85-115	04-JUN-19
<b>WG3065518-22</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 10 of 12

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4659028							
<b>WG3065518-22 MB</b>								
Total Dissolved Solids			<10		mg/L		10	04-JUN-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4655310							
<b>WG3066708-10 LCS</b>								
Total Kjeldahl Nitrogen			95.7		%		75-125	03-JUN-19
<b>WG3066708-2 LCS</b>								
Total Kjeldahl Nitrogen			96.9		%		75-125	03-JUN-19
<b>WG3066708-5 LCS</b>								
Total Kjeldahl Nitrogen			96.1		%		75-125	03-JUN-19
<b>WG3066708-8 LCS</b>								
Total Kjeldahl Nitrogen			92.3		%		75-125	03-JUN-19
<b>WG3066708-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4656106							
<b>WG3066873-20 LCS</b>								
Total Suspended Solids			99.5		%		85-115	04-JUN-19
<b>WG3066873-19 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	04-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4653349							
<b>WG3064559-8 LCS</b>								
Turbidity			97.5		%		85-115	31-MAY-19
<b>WG3064559-7 MB</b>								
Turbidity			<0.10		NTU		0.1	31-MAY-19

# Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 11 of 12

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2281732

Report Date: 06-JUN-19

Page 12 of 12

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-MAY-19 10:52	05-JUN-19 11:25	0.25	192	hours	EHTR-FM
pH	1	28-MAY-19 10:52	05-JUN-19 10:00	0.25	191	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2281732 were received on 29-MAY-19 09:00.


ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-01\_2019-05-28**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EIDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N
 L2281732-COFC														
RG_DW-03-01_WP_Q2-2019_NP	RG_DW-03-01	WP	N	28-May-19	1052	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TRN/TOC	HC-D-CVAF-VA	HC-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
								1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			Dk	5/29 0900

SERVICEREQUEST (rush = subject to availability)	Sampler's Name	Mobile #	Sampler's Signature	Date/Time
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jennifer de Werk	250-910-7287		May 28, 2019 1315

g.c





Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 29-MAY-19  
Report Date: 06-JUN-19 15:52 (MT)  
Version: FINAL

Client Phone: 250-865-5289

## Certificate of Analysis

Lab Work Order #: L2281745  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-04\_2019-05-28  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2281745-1 WP 28-MAY-19 10:52 RG_DW-03-04_WP_Q2-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	561			
	Hardness (as CaCO3) (mg/L)	269			
	pH (pH)	8.31			
	ORP (mV)	427			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	323	DLHC		
	Turbidity (NTU)	2.43			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	174			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	3.2			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	177			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	0.117			
	Chloride (Cl) (mg/L)	15.0			
	Fluoride (F) (mg/L)	0.153			
	Ion Balance (%)	94.3			
	Nitrate (as N) (mg/L)	1.22			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.173			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0022			
	Phosphorus (P)-Total (mg/L)	0.0045			
	Sulfate (SO4) (mg/L)	95.9			
	Anion Sum (meq/L)	6.06			
	Cation Sum (meq/L)	5.71			
	Cation - Anion Balance (%)	-3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.88			
	Total Organic Carbon (mg/L)	0.79			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	0.00012			
	Arsenic (As)-Total (mg/L)	0.00012			
	Barium (Ba)-Total (mg/L)	0.155			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0136			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2281745-1 WP 28-MAY-19 10:52 RG_DW-03-04_WP_Q2-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	70.3			
	Chromium (Cr)-Total (mg/L)	0.00018			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0096			
	Magnesium (Mg)-Total (mg/L)	23.0			
	Manganese (Mn)-Total (mg/L)	0.00032			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00105			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.895			
	Selenium (Se)-Total (ug/L)	10.1			
	Silicon (Si)-Total (mg/L)	2.33			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	7.66			
	Strontium (Sr)-Total (mg/L)	0.152			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00109			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0036			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00012			
	Barium (Ba)-Dissolved (mg/L)	0.138			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0123			
	Calcium (Ca)-Dissolved (mg/L)	70.1			
	Chromium (Cr)-Dissolved (mg/L)	0.00013			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2281745-1 WP 28-MAY-19 10:52 RG_DW-03- 04_WP_Q2- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	<0.00050			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0090			
	Magnesium (Mg)-Dissolved (mg/L)	22.8			
	Manganese (Mn)-Dissolved (mg/L)	0.00031			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000981			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.856			
	Selenium (Se)-Dissolved (ug/L)	9.50			
	Silicon (Si)-Dissolved (mg/L)	2.26			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	7.33			
	Strontium (Sr)-Dissolved (mg/L)	0.157			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000940			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0031			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2281745-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2281745-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2281745-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2281745-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2281745-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2281745-1
Matrix Spike	Ammonia as N	MS-B	L2281745-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum			

## Reference Information

electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

03-04\_2019-05-28

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4659132							
<b>WG3068025-5</b>	<b>LCS</b>							
Acidity (as CaCO3)			101.6		%		85-115	04-JUN-19
<b>WG3068025-4</b>	<b>MB</b>							
Acidity (as CaCO3)			1.2		mg/L		2	04-JUN-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			99.3		%		85-115	05-JUN-19
<b>WG3068525-7</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	05-JUN-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4653601							
<b>WG3064723-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.0		%		80-120	31-MAY-19
<b>WG3064723-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	31-MAY-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4654145							
<b>WG3064717-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			99.2		%		80-120	01-JUN-19
<b>WG3064717-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	01-JUN-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Bromide (Br)			98.8		%		85-115	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	30-MAY-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4653355							
<b>WG3064856-10</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.4		%		80-120	31-MAY-19
<b>WG3064856-9</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4653355							
<b>WG3064856-10</b>	<b>LCS</b>							
Total Organic Carbon			98.1		%		80-120	31-MAY-19
<b>WG3064856-9</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	31-MAY-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Chloride (Cl)			98.8		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	30-MAY-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.8		%		90-110	05-JUN-19
<b>WG3068525-7</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	05-JUN-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Fluoride (F)			103.5		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	30-MAY-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4655189							
<b>WG3066173-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			102.6		%		80-120	04-JUN-19
<b>WG3066173-1</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	04-JUN-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4655189							
<b>WG3066569-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			103.2		%		80-120	04-JUN-19
<b>WG3066569-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-JUN-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064723-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			94.6		%		80-120	31-MAY-19
Antimony (Sb)-Dissolved			91.7		%		80-120	31-MAY-19
Arsenic (As)-Dissolved			94.9		%		80-120	31-MAY-19
Barium (Ba)-Dissolved			93.2		%		80-120	31-MAY-19
Bismuth (Bi)-Dissolved			95.3		%		80-120	31-MAY-19
Boron (B)-Dissolved			91.8		%		80-120	31-MAY-19
Cadmium (Cd)-Dissolved			97.7		%		80-120	31-MAY-19
Calcium (Ca)-Dissolved			95.5		%		80-120	31-MAY-19
Chromium (Cr)-Dissolved			95.7		%		80-120	31-MAY-19
Cobalt (Co)-Dissolved			93.7		%		80-120	31-MAY-19
Copper (Cu)-Dissolved			95.9		%		80-120	31-MAY-19
Iron (Fe)-Dissolved			91.0		%		80-120	31-MAY-19
Lead (Pb)-Dissolved			93.3		%		80-120	31-MAY-19
Lithium (Li)-Dissolved			92.7		%		80-120	31-MAY-19
Magnesium (Mg)-Dissolved			94.6		%		80-120	31-MAY-19
Manganese (Mn)-Dissolved			92.9		%		80-120	31-MAY-19
Molybdenum (Mo)-Dissolved			95.3		%		80-120	31-MAY-19
Nickel (Ni)-Dissolved			96.8		%		80-120	31-MAY-19
Potassium (K)-Dissolved			94.0		%		80-120	31-MAY-19
Selenium (Se)-Dissolved			98.8		%		80-120	31-MAY-19
Silicon (Si)-Dissolved			97.3		%		60-140	31-MAY-19
Silver (Ag)-Dissolved			90.9		%		80-120	31-MAY-19
Sodium (Na)-Dissolved			97.1		%		80-120	31-MAY-19
Strontium (Sr)-Dissolved			92.1		%		80-120	31-MAY-19
Thallium (Tl)-Dissolved			94.5		%		80-120	31-MAY-19
Tin (Sn)-Dissolved			92.8		%		80-120	31-MAY-19
Titanium (Ti)-Dissolved			91.5		%		80-120	31-MAY-19
Uranium (U)-Dissolved			90.1		%		80-120	31-MAY-19
Vanadium (V)-Dissolved			95.3		%		80-120	31-MAY-19
Zinc (Zn)-Dissolved			93.2		%		80-120	31-MAY-19
<b>WG3064723-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4653601</b>							
<b>WG3064723-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	31-MAY-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	31-MAY-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	31-MAY-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	31-MAY-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	31-MAY-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	31-MAY-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	31-MAY-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	31-MAY-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	31-MAY-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	31-MAY-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	31-MAY-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			101.2		%		80-120	01-JUN-19
Antimony (Sb)-Total			105.6		%		80-120	01-JUN-19
Arsenic (As)-Total			97.7		%		80-120	01-JUN-19
Barium (Ba)-Total			106.8		%		80-120	01-JUN-19



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-2 LCS</b>								
Bismuth (Bi)-Total			98.4		%		80-120	01-JUN-19
Boron (B)-Total			98.7		%		80-120	01-JUN-19
Cadmium (Cd)-Total			101.6		%		80-120	01-JUN-19
Calcium (Ca)-Total			98.1		%		80-120	01-JUN-19
Chromium (Cr)-Total			104.4		%		80-120	01-JUN-19
Cobalt (Co)-Total			101.2		%		80-120	01-JUN-19
Copper (Cu)-Total			99.2		%		80-120	01-JUN-19
Iron (Fe)-Total			99.3		%		80-120	01-JUN-19
Lead (Pb)-Total			99.5		%		80-120	01-JUN-19
Lithium (Li)-Total			98.5		%		80-120	01-JUN-19
Magnesium (Mg)-Total			97.9		%		80-120	01-JUN-19
Manganese (Mn)-Total			104.4		%		80-120	01-JUN-19
Molybdenum (Mo)-Total			101.4		%		80-120	01-JUN-19
Nickel (Ni)-Total			99.9		%		80-120	01-JUN-19
Potassium (K)-Total			100.8		%		80-120	01-JUN-19
Selenium (Se)-Total			99.3		%		80-120	01-JUN-19
Silicon (Si)-Total			101.0		%		80-120	01-JUN-19
Silver (Ag)-Total			98.6		%		80-120	01-JUN-19
Sodium (Na)-Total			104.7		%		80-120	01-JUN-19
Strontium (Sr)-Total			99.8		%		80-120	01-JUN-19
Thallium (Tl)-Total			100.0		%		80-120	01-JUN-19
Tin (Sn)-Total			101.0		%		80-120	01-JUN-19
Titanium (Ti)-Total			99.7		%		80-120	01-JUN-19
Uranium (U)-Total			98.2		%		80-120	01-JUN-19
Vanadium (V)-Total			101.7		%		80-120	01-JUN-19
Zinc (Zn)-Total			103.8		%		80-120	01-JUN-19
<b>WG3064717-1 MB</b>								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-JUN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Boron (B)-Total			<0.010		mg/L		0.01	01-JUN-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	01-JUN-19



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4654145</b>							
<b>WG3064717-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	01-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	01-JUN-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	01-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	01-JUN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-JUN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	01-JUN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	01-JUN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-JUN-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-JUN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-JUN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-JUN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	01-JUN-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4659385</b>							
<b>WG3068375-6</b>	<b>LCS</b>							
Ammonia as N			97.0		%		85-115	04-JUN-19
<b>WG3068375-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	04-JUN-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4658949</b>							
<b>WG3068173-2</b>	<b>LCS</b>							
Nitrite (as N)			100.9		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	30-MAY-19



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Nitrate (as N)			98.9		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	30-MAY-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4659356							
<b>WG3068582-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			223		mV		210-230	05-JUN-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4658959							
<b>WG3067258-41</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.4		%		80-120	04-JUN-19
<b>WG3067258-10</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	04-JUN-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4659448							
<b>WG3068525-8</b>	<b>LCS</b>							
pH			6.98		pH		6.9-7.1	05-JUN-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4653118							
<b>WG3064405-10</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			102.0		%		80-120	31-MAY-19
<b>WG3064405-9</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	31-MAY-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4658949							
<b>WG3068173-2</b>	<b>LCS</b>							
Sulfate (SO4)			99.8		%		90-110	30-MAY-19
<b>WG3068173-1</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	30-MAY-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4659028							
<b>WG3065518-23</b>	<b>LCS</b>							
Total Dissolved Solids			93.6		%		85-115	04-JUN-19
<b>WG3065518-22</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>		<b>Water</b>						
Batch	R4659028							
<b>WG3065518-22 MB</b>								
Total Dissolved Solids			<10		mg/L		10	04-JUN-19
<b>TKN-L-F-CL</b>		<b>Water</b>						
Batch	R4655310							
<b>WG3066708-10 LCS</b>								
Total Kjeldahl Nitrogen			95.7		%		75-125	03-JUN-19
<b>WG3066708-2 LCS</b>								
Total Kjeldahl Nitrogen			96.9		%		75-125	03-JUN-19
<b>WG3066708-5 LCS</b>								
Total Kjeldahl Nitrogen			96.1		%		75-125	03-JUN-19
<b>WG3066708-8 LCS</b>								
Total Kjeldahl Nitrogen			92.3		%		75-125	03-JUN-19
<b>WG3066708-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-4 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>WG3066708-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	03-JUN-19
<b>TSS-L-CL</b>		<b>Water</b>						
Batch	R4656106							
<b>WG3066873-20 LCS</b>								
Total Suspended Solids			99.5		%		85-115	04-JUN-19
<b>WG3066873-19 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	04-JUN-19
<b>TURBIDITY-CL</b>		<b>Water</b>						
Batch	R4653349							
<b>WG3064559-8 LCS</b>								
Turbidity			97.5		%		85-115	31-MAY-19
<b>WG3064559-7 MB</b>								
Turbidity			<0.10		NTU		0.1	31-MAY-19

# Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate



# Quality Control Report

Workorder: L2281745

Report Date: 06-JUN-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-MAY-19 10:52	05-JUN-19 11:25	0.25	192	hours	EHTR-FM
pH	1	28-MAY-19 10:52	05-JUN-19 10:00	0.25	191	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2281745 were received on 29-MAY-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-04\_2019-05-28**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	Jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field, L: Lab, T: Field & Lab, N: None



L2281745-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED							F	N	F	N	F	N	N																		
								ALS_Package-DOC	ALS_Package-TKNTOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA																									
RG_DW-03-01_WP_Q2-2019_NP	RG_DW-03-01	WP	N	28-May-19	1052	G	7	1	1	1	1	1	1	1	1																								

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**

*Dle* *5/29 0900*

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name

*Jennifer Dewerk*

Mobile #

250-910-7287

Sampler's Signature

Date/Time

May 28, 2019 1315

*90*



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 23-AUG-19  
Report Date: 02-SEP-19 18:51 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2334665  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-03\_Q3-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2334665-1 WP 22-AUG-19 08:41 RG_DW-01- 03_WP_Q3- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	342			
	Hardness (as CaCO3) (mg/L)	195			
	pH (pH)	8.16			
	ORP (mV)	340			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	217	DLHC		
	Turbidity (NTU)	0.18			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2.6			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	162			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	162			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.91			
	Fluoride (F) (mg/L)	0.142			
	Ion Balance (%)	94.2			
	Nitrate (as N) (mg/L)	0.935			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.267			
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	41.7			
	Anion Sum (meq/L)	4.21			
	Cation Sum (meq/L)	3.96			
	Cation - Anion Balance (%)	-3.0			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
	Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0785			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0101			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2334665-1 WP 22-AUG-19 08:41 RG_DW-01-03_WP_Q3-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	53.8			
	Chromium (Cr)-Total (mg/L)	0.00028			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00079			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000102			
	Lithium (Li)-Total (mg/L)	0.0025			
	Magnesium (Mg)-Total (mg/L)	13.9			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00104			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.440			
	Selenium (Se)-Total (ug/L)	3.93			
	Silicon (Si)-Total (mg/L)	2.18			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.31			
	Strontium (Sr)-Total (mg/L)	0.218			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000809			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0068			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0718			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0077			
	Calcium (Ca)-Dissolved (mg/L)	55.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00034			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2334665-1 WP 22-AUG-19 08:41 RG_DW-01- 03_WP_Q3- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00068			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000057			
	Lithium (Li)-Dissolved (mg/L)	0.0024			
	Magnesium (Mg)-Dissolved (mg/L)	13.9			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000997			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.430			
	Selenium (Se)-Dissolved (ug/L)	4.37			
	Silicon (Si)-Dissolved (mg/L)	2.17			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	1.34			
	Strontium (Sr)-Dissolved (mg/L)	0.202			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000841			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0060			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2334665-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2334665-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2334665-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2334665-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2334665-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2334665-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2334665-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2334665-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2334665-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

## Reference Information

<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.			



## Reference Information

<b>SO4-IC-N-CL</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>SOLIDS-TDS-CL</b>	Water	Total Dissolved Solids	APHA 2540 C
A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).			
<b>TECKCOAL-IONBAL-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$			
<b>TKN-L-F-CL</b>	Water	Total Kjeldahl Nitrogen	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
<b>TSS-L-CL</b>	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.			
<b>TURBIDITY-CL</b>	Water	Turbidity	APHA 2130 B-Nephelometer
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

01-03\_Q3-2019

**GLOSSARY OF REPORT TERMS**

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769704</b>							
<b>WG3144261-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.6		%		85-115	26-AUG-19
<b>WG3144261-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769709</b>							
<b>WG3144676-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4773790</b>							
<b>WG3145369-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			95.5		%		80-120	28-AUG-19
<b>WG3145369-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.7		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-6</b>	<b>LCS</b>							
Bromide (Br)			102.7		%		85-115	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768411</b>							
<b>WG3143132-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.2		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-6</b>	<b>LCS</b>							
Total Organic Carbon			103.0		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-6</b>	<b>LCS</b>							
Chloride (Cl)			102.2		%		90-110	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4769709							
<b>WG3144676-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-6</b>	<b>LCS</b>							
Fluoride (F)			108.6		%		90-110	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4777943							
<b>WG3146604-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.3		%		80-120	30-AUG-19
<b>WG3146604-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4775448							
<b>WG3146694-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.4		%		80-120	29-AUG-19
<b>WG3146694-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4773790</b>							
<b>WG3145369-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			99.4		%		80-120	28-AUG-19
Antimony (Sb)-Dissolved			98.6		%		80-120	28-AUG-19
Arsenic (As)-Dissolved			97.5		%		80-120	28-AUG-19
Barium (Ba)-Dissolved			94.7		%		80-120	28-AUG-19
Bismuth (Bi)-Dissolved			100.9		%		80-120	28-AUG-19
Boron (B)-Dissolved			96.6		%		80-120	28-AUG-19
Cadmium (Cd)-Dissolved			94.8		%		80-120	28-AUG-19
Calcium (Ca)-Dissolved			99.2		%		80-120	28-AUG-19
Chromium (Cr)-Dissolved			99.2		%		80-120	28-AUG-19
Cobalt (Co)-Dissolved			99.2		%		80-120	28-AUG-19
Copper (Cu)-Dissolved			99.2		%		80-120	28-AUG-19
Iron (Fe)-Dissolved			99.8		%		80-120	28-AUG-19
Lead (Pb)-Dissolved			99.9		%		80-120	28-AUG-19
Lithium (Li)-Dissolved			93.4		%		80-120	28-AUG-19
Magnesium (Mg)-Dissolved			105.0		%		80-120	28-AUG-19
Manganese (Mn)-Dissolved			98.8		%		80-120	28-AUG-19
Molybdenum (Mo)-Dissolved			99.2		%		80-120	28-AUG-19
Nickel (Ni)-Dissolved			99.2		%		80-120	28-AUG-19
Potassium (K)-Dissolved			98.6		%		80-120	28-AUG-19
Selenium (Se)-Dissolved			101.6		%		80-120	28-AUG-19
Silicon (Si)-Dissolved			100.7		%		60-140	28-AUG-19
Silver (Ag)-Dissolved			94.5		%		80-120	28-AUG-19
Sodium (Na)-Dissolved			102.6		%		80-120	28-AUG-19
Strontium (Sr)-Dissolved			97.1		%		80-120	28-AUG-19
Thallium (Tl)-Dissolved			100.6		%		80-120	28-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	28-AUG-19
Titanium (Ti)-Dissolved			95.5		%		80-120	28-AUG-19
Uranium (U)-Dissolved			100.2		%		80-120	28-AUG-19
Vanadium (V)-Dissolved			99.9		%		80-120	28-AUG-19
Zinc (Zn)-Dissolved			95.7		%		80-120	28-AUG-19
<b>WG3145369-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4773790</b>							
<b>WG3145369-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			106.5		%		80-120	27-AUG-19
Antimony (Sb)-Total			98.6		%		80-120	27-AUG-19
Arsenic (As)-Total			103.1		%		80-120	27-AUG-19
Barium (Ba)-Total			106.5		%		80-120	27-AUG-19



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			96.0		%		80-120	27-AUG-19
Boron (B)-Total			99.3		%		80-120	27-AUG-19
Cadmium (Cd)-Total			100.0		%		80-120	27-AUG-19
Calcium (Ca)-Total			98.8		%		80-120	27-AUG-19
Chromium (Cr)-Total			101.2		%		80-120	27-AUG-19
Cobalt (Co)-Total			102.7		%		80-120	27-AUG-19
Copper (Cu)-Total			101.3		%		80-120	27-AUG-19
Iron (Fe)-Total			97.5		%		80-120	27-AUG-19
Lead (Pb)-Total			94.6		%		80-120	27-AUG-19
Lithium (Li)-Total			100.2		%		80-120	27-AUG-19
Magnesium (Mg)-Total			102.4		%		80-120	27-AUG-19
Manganese (Mn)-Total			102.2		%		80-120	27-AUG-19
Molybdenum (Mo)-Total			103.9		%		80-120	27-AUG-19
Nickel (Ni)-Total			102.7		%		80-120	27-AUG-19
Potassium (K)-Total			106.0		%		80-120	27-AUG-19
Selenium (Se)-Total			100.0		%		80-120	27-AUG-19
Silicon (Si)-Total			111.0		%		80-120	27-AUG-19
Silver (Ag)-Total			95.3		%		80-120	27-AUG-19
Sodium (Na)-Total			105.9		%		80-120	27-AUG-19
Strontium (Sr)-Total			100.4		%		80-120	27-AUG-19
Thallium (Tl)-Total			95.2		%		80-120	27-AUG-19
Tin (Sn)-Total			98.2		%		80-120	27-AUG-19
Titanium (Ti)-Total			107.9		%		80-120	27-AUG-19
Uranium (U)-Total			92.9		%		80-120	27-AUG-19
Vanadium (V)-Total			105.1		%		80-120	27-AUG-19
Zinc (Zn)-Total			90.5		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	27-AUG-19



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4776248</b>							
<b>WG3145855-34</b>	<b>LCS</b>							
Ammonia as N			105.8		%		85-115	28-AUG-19
<b>WG3145855-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-6</b>	<b>LCS</b>							
Nitrite (as N)			107.6		%		90-110	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-6</b>	<b>LCS</b>							
Nitrate (as N)			105.0		%		90-110	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4773131							
<b>WG3145474-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	27-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4768218							
<b>WG3142667-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.3		%		80-120	24-AUG-19
<b>WG3142667-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4769709							
<b>WG3144676-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	27-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4767870							
<b>WG3142434-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19
<b>WG3142434-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-6</b>	<b>LCS</b>							
Sulfate (SO4)			104.9		%		90-110	23-AUG-19
<b>WG3143904-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4777452							
<b>WG3145045-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.5		%		85-115	28-AUG-19
<b>WG3145045-1</b>	<b>MB</b>							





## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4777452							
<b>WG3145045-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	28-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4778448							
<b>WG3148809-10 LCS</b>								
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-13 LCS</b>								
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-16 LCS</b>								
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-2 LCS</b>								
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-24 LCS</b>								
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-27 LCS</b>								
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
<b>WG3148809-31 LCS</b>								
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34 LCS</b>								
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8 LCS</b>								
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19



## Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4778448							
<b>WG3148809-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4777613							
<b>WG3144790-2 LCS</b>								
Total Suspended Solids			92.0		%		85-115	28-AUG-19
<b>WG3144790-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4768077							
<b>WG3142660-2 LCS</b>								
Turbidity			96.5		%		85-115	24-AUG-19
<b>WG3142660-1 MB</b>								
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2334665

Report Date: 02-SEP-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	22-AUG-19 08:41	27-AUG-19 13:30	0.25	125	hours	EHTR-FM
pH	1	22-AUG-19 08:41	27-AUG-19 09:00	0.25	120	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334665 were received on 23-AUG-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **01-03\_Q3-2019**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	VOB 2G0		Country	Canada	Postal Code	T1Y 7B5		Country	Canada			
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field; L: Lab; F: Field & Lab; N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED											
								F	N	F	N	F	N	N					
RG_DW-01-03_WP_Q3-2019_NP	RG_DW-01-03	WP	N	22-Aug-19	8:41	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3						
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA					

ADDITIONAL/COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>[Signature]</i>	8/23 8:45

SERVICE REQUEST (rush - subject to availability)					
Regular (default)	<input checked="" type="checkbox"/>	Sampler's Name	Jennifer de Werk / <i>[Signature]</i>	Mobile #	250-910-7287
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	<i>[Signature]</i>	Date/Time	Aug 22/19 11:30
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

*82*



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 23-AUG-19  
Report Date: 31-AUG-19 17:31 (MT)  
Version: FINAL

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2334655  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-07\_Q3-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2334655-1				
Description	WP				
Sampled Date	22-AUG-19				
Sampled Time	09:50				
Client ID	RG_DW-01-07_WP_Q3-2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	800			
	Hardness (as CaCO3) (mg/L)	488			
	pH (pH)	8.10			
	ORP (mV)	460			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	525	DLHC		
	Turbidity (NTU)	0.22			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	24.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	380			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	380			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	31.7			
	Fluoride (F) (mg/L)	0.064			
	Ion Balance (%)	103			
	Nitrate (as N) (mg/L)	0.910			
	Nitrite (as N) (mg/L)	0.0033			
	Total Kjeldahl Nitrogen (mg/L)	0.125			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	60.0			
	Anion Sum (meq/L)	9.80			
	Cation Sum (meq/L)	10.1			
	Cation - Anion Balance (%)	1.6			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.74			
	Total Organic Carbon (mg/L)	0.69			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.138			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.018			
	Cadmium (Cd)-Total (ug/L)	0.0464			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2334655-1	WP	22-AUG-19	09:50	RG_DW-01-07_WP_Q3-2019_NP
<b>WATER</b>						
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)			117		
	Chromium (Cr)-Total (mg/L)			0.00021		
	Cobalt (Co)-Total (ug/L)			<0.10		
	Copper (Cu)-Total (mg/L)			0.00608		
	Iron (Fe)-Total (mg/L)			0.012		
	Lead (Pb)-Total (mg/L)			0.000275		
	Lithium (Li)-Total (mg/L)			0.0070		
	Magnesium (Mg)-Total (mg/L)			42.3		
	Manganese (Mn)-Total (mg/L)			0.00028		
	Mercury (Hg)-Total (mg/L)			<0.0000050		
	Molybdenum (Mo)-Total (mg/L)			0.00401		
	Nickel (Ni)-Total (mg/L)			<0.00050		
	Potassium (K)-Total (mg/L)			1.00		
	Selenium (Se)-Total (ug/L)			1.60		
	Silicon (Si)-Total (mg/L)			6.47		
	Silver (Ag)-Total (mg/L)			<0.000010		
	Sodium (Na)-Total (mg/L)			8.11		
	Strontium (Sr)-Total (mg/L)			0.308		
	Thallium (Tl)-Total (mg/L)			<0.000010		
	Tin (Sn)-Total (mg/L)			0.00019		
	Titanium (Ti)-Total (mg/L)			<0.010		
	Uranium (U)-Total (mg/L)			0.00167		
	Vanadium (V)-Total (mg/L)			<0.00050		
	Zinc (Zn)-Total (mg/L)			0.0125		
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location			FIELD		
	Dissolved Metals Filtration Location			FIELD		
	Aluminum (Al)-Dissolved (mg/L)			<0.0030		
	Antimony (Sb)-Dissolved (mg/L)			<0.00010		
	Arsenic (As)-Dissolved (mg/L)			<0.00010		
	Barium (Ba)-Dissolved (mg/L)			0.132		
	Beryllium (Be)-Dissolved (ug/L)			<0.020		
	Bismuth (Bi)-Dissolved (mg/L)			<0.000050		
	Boron (B)-Dissolved (mg/L)			0.020		
	Cadmium (Cd)-Dissolved (ug/L)			0.0444		
	Calcium (Ca)-Dissolved (mg/L)			119		
	Chromium (Cr)-Dissolved (mg/L)			0.00017		
	Cobalt (Co)-Dissolved (ug/L)			<0.10		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2334655-1	WP	22-AUG-19	09:50	RG_DW-01-07_WP_Q3-2019_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)			0.00112		
	Iron (Fe)-Dissolved (mg/L)			<0.010		
	Lead (Pb)-Dissolved (mg/L)			0.000110		
	Lithium (Li)-Dissolved (mg/L)			0.0073		
	Magnesium (Mg)-Dissolved (mg/L)			46.1		
	Manganese (Mn)-Dissolved (mg/L)			0.00023		
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)			0.00383		
	Nickel (Ni)-Dissolved (mg/L)			<0.00050		
	Potassium (K)-Dissolved (mg/L)			0.979		
	Selenium (Se)-Dissolved (ug/L)			1.84		
	Silicon (Si)-Dissolved (mg/L)			6.66		
	Silver (Ag)-Dissolved (mg/L)			<0.000010		
	Sodium (Na)-Dissolved (mg/L)			8.23		
	Strontium (Sr)-Dissolved (mg/L)			0.297		
	Thallium (Tl)-Dissolved (mg/L)			<0.000010		
	Tin (Sn)-Dissolved (mg/L)			0.00012		
	Titanium (Ti)-Dissolved (mg/L)			<0.010		
	Uranium (U)-Dissolved (mg/L)			0.00162		
	Vanadium (V)-Dissolved (mg/L)			<0.00050		
	Zinc (Zn)-Dissolved (mg/L)			0.0095		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2334655-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2334655-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2334655-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2334655-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2334655-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

## Reference Information

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

---

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

### Chain of Custody Numbers:

01-07\_Q3-2019

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769704</b>							
<b>WG3144261-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.6		%		85-115	26-AUG-19
<b>WG3144261-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	26-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769709</b>							
<b>WG3144676-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.1		%		85-115	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.7		%		80-120	28-AUG-19
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	28-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			98.7		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	27-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-10</b>	<b>LCS</b>							
Bromide (Br)			99.6		%		85-115	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	23-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4768411</b>							
<b>WG3143132-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			95.2		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-6</b>	<b>LCS</b>							
Total Organic Carbon			103.0		%		80-120	25-AUG-19
<b>WG3143132-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Chloride (Cl)			103.6		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	23-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4769709							
<b>WG3144676-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			99.0		%		90-110	27-AUG-19
<b>WG3144676-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Fluoride (F)			107.1		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	23-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4777943							
<b>WG3146604-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			97.3		%		80-120	30-AUG-19
<b>WG3146604-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	30-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4775448							
<b>WG3146694-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.4		%		80-120	29-AUG-19
<b>WG3146694-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	29-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			100.1		%		80-120	28-AUG-19
Antimony (Sb)-Dissolved			97.1		%		80-120	28-AUG-19
Arsenic (As)-Dissolved			100.2		%		80-120	28-AUG-19
Barium (Ba)-Dissolved			100.6		%		80-120	28-AUG-19
Bismuth (Bi)-Dissolved			106.2		%		80-120	28-AUG-19
Boron (B)-Dissolved			104.7		%		80-120	28-AUG-19
Cadmium (Cd)-Dissolved			99.7		%		80-120	28-AUG-19
Calcium (Ca)-Dissolved			100.3		%		80-120	28-AUG-19
Chromium (Cr)-Dissolved			101.0		%		80-120	28-AUG-19
Cobalt (Co)-Dissolved			100.7		%		80-120	28-AUG-19
Copper (Cu)-Dissolved			101.2		%		80-120	28-AUG-19
Iron (Fe)-Dissolved			104.9		%		80-120	28-AUG-19
Lead (Pb)-Dissolved			100.1		%		80-120	28-AUG-19
Lithium (Li)-Dissolved			99.5		%		80-120	28-AUG-19
Magnesium (Mg)-Dissolved			103.0		%		80-120	28-AUG-19
Manganese (Mn)-Dissolved			101.6		%		80-120	28-AUG-19
Molybdenum (Mo)-Dissolved			100.4		%		80-120	28-AUG-19
Nickel (Ni)-Dissolved			100.2		%		80-120	28-AUG-19
Potassium (K)-Dissolved			98.5		%		80-120	28-AUG-19
Selenium (Se)-Dissolved			100.9		%		80-120	28-AUG-19
Silicon (Si)-Dissolved			106.7		%		60-140	28-AUG-19
Silver (Ag)-Dissolved			95.7		%		80-120	28-AUG-19
Sodium (Na)-Dissolved			106.6		%		80-120	28-AUG-19
Strontium (Sr)-Dissolved			94.3		%		80-120	28-AUG-19
Thallium (Tl)-Dissolved			101.9		%		80-120	28-AUG-19
Tin (Sn)-Dissolved			98.0		%		80-120	28-AUG-19
Titanium (Ti)-Dissolved			100.2		%		80-120	28-AUG-19
Uranium (U)-Dissolved			97.4		%		80-120	28-AUG-19
Vanadium (V)-Dissolved			102.4		%		80-120	28-AUG-19
Zinc (Zn)-Dissolved			101.7		%		80-120	28-AUG-19
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4772449</b>							
<b>WG3145166-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	28-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	28-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	28-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	28-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	28-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	28-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	28-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	28-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	28-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	28-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	28-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			106.5		%		80-120	27-AUG-19
Antimony (Sb)-Total			98.6		%		80-120	27-AUG-19
Arsenic (As)-Total			103.1		%		80-120	27-AUG-19
Barium (Ba)-Total			106.5		%		80-120	27-AUG-19





## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			96.0		%		80-120	27-AUG-19
Boron (B)-Total			99.3		%		80-120	27-AUG-19
Cadmium (Cd)-Total			100.0		%		80-120	27-AUG-19
Calcium (Ca)-Total			98.8		%		80-120	27-AUG-19
Chromium (Cr)-Total			101.2		%		80-120	27-AUG-19
Cobalt (Co)-Total			102.7		%		80-120	27-AUG-19
Copper (Cu)-Total			101.3		%		80-120	27-AUG-19
Iron (Fe)-Total			97.5		%		80-120	27-AUG-19
Lead (Pb)-Total			94.6		%		80-120	27-AUG-19
Lithium (Li)-Total			100.2		%		80-120	27-AUG-19
Magnesium (Mg)-Total			102.4		%		80-120	27-AUG-19
Manganese (Mn)-Total			102.2		%		80-120	27-AUG-19
Molybdenum (Mo)-Total			103.9		%		80-120	27-AUG-19
Nickel (Ni)-Total			102.7		%		80-120	27-AUG-19
Potassium (K)-Total			106.0		%		80-120	27-AUG-19
Selenium (Se)-Total			100.0		%		80-120	27-AUG-19
Silicon (Si)-Total			111.0		%		80-120	27-AUG-19
Silver (Ag)-Total			95.3		%		80-120	27-AUG-19
Sodium (Na)-Total			105.9		%		80-120	27-AUG-19
Strontium (Sr)-Total			100.4		%		80-120	27-AUG-19
Thallium (Tl)-Total			95.2		%		80-120	27-AUG-19
Tin (Sn)-Total			98.2		%		80-120	27-AUG-19
Titanium (Ti)-Total			107.9		%		80-120	27-AUG-19
Uranium (U)-Total			92.9		%		80-120	27-AUG-19
Vanadium (V)-Total			105.1		%		80-120	27-AUG-19
Zinc (Zn)-Total			90.5		%		80-120	27-AUG-19
<b>WG3144143-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	27-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	27-AUG-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	27-AUG-19



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4771259</b>							
<b>WG3144143-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	27-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	27-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	27-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	27-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	27-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	27-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	27-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	27-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	27-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	27-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	27-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	27-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	27-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	27-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4776248</b>							
<b>WG3145855-34</b>	<b>LCS</b>							
Ammonia as N			105.8		%		85-115	28-AUG-19
<b>WG3145855-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	28-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769110</b>							
<b>WG3143904-10</b>	<b>LCS</b>							
Nitrite (as N)			106.5		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	23-AUG-19



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Nitrate (as N)			104.2		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	23-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4773131							
<b>WG3145474-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	27-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4768218							
<b>WG3142667-26</b>	<b>LCS</b>							
Phosphorus (P)-Total			105.3		%		80-120	24-AUG-19
<b>WG3142667-25</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	24-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4769709							
<b>WG3144676-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	27-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4767870							
<b>WG3142434-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			99.4		%		80-120	24-AUG-19
<b>WG3142434-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	24-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4769110							
<b>WG3143904-10</b>	<b>LCS</b>							
Sulfate (SO4)			104.9		%		90-110	23-AUG-19
<b>WG3143904-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	23-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4777452							
<b>WG3145045-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.5		%		85-115	28-AUG-19
<b>WG3145045-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4777452							
<b>WG3145045-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	28-AUG-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4778448							
<b>WG3148809-10 LCS</b>								
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-13 LCS</b>								
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-16 LCS</b>								
Total Kjeldahl Nitrogen			94.5		%		75-125	30-AUG-19
<b>WG3148809-2 LCS</b>								
Total Kjeldahl Nitrogen			94.9		%		75-125	30-AUG-19
<b>WG3148809-24 LCS</b>								
Total Kjeldahl Nitrogen			92.7		%		75-125	30-AUG-19
<b>WG3148809-27 LCS</b>								
Total Kjeldahl Nitrogen			89.2		%		75-125	30-AUG-19
<b>WG3148809-31 LCS</b>								
Total Kjeldahl Nitrogen			94.7		%		75-125	30-AUG-19
<b>WG3148809-34 LCS</b>								
Total Kjeldahl Nitrogen			94.8		%		75-125	30-AUG-19
<b>WG3148809-8 LCS</b>								
Total Kjeldahl Nitrogen			94.1		%		75-125	30-AUG-19
<b>WG3148809-1 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-12 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-15 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-23 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-26 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-30 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-33 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>WG3148809-7 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19



## Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4778448							
<b>WG3148809-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4777613							
<b>WG3144790-2 LCS</b>								
Total Suspended Solids			92.0		%		85-115	28-AUG-19
<b>WG3144790-1 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	28-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4768077							
<b>WG3142660-2 LCS</b>								
Turbidity			96.5		%		85-115	24-AUG-19
<b>WG3142660-1 MB</b>								
Turbidity			<0.10		NTU		0.1	24-AUG-19

# Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2334655

Report Date: 31-AUG-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	22-AUG-19 09:50	27-AUG-19 13:30	0.25	124	hours	EHTR-FM
pH	1	22-AUG-19 09:50	27-AUG-19 09:00	0.25	119	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2334655 were received on 23-AUG-19 08:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

<b>COC ID:</b> 01-07_Q3-2019		<b>TURNAROUND TIME:</b>		<b>RUSH:</b>				
<b>PROJECT/CLIENT INFO</b>			<b>LABORATORY</b>			<b>OTHER INFO</b>		
Facility Name / Job# Regional Effects Program			Lab Name ALS Calgary			Report Format / Distribution		
Project Manager Allie Ferguson			Lab Contact Lyudmyla Shvets			Excel PDF EDD		
Email allie.ferguson@teck.com			Email lyudmyla.shvets@alsglobal.com			Email 1: Allie.ferguson@teck.com X X X		
Address 421 Pine Ave			Address 2559 29 st NE			Email 2: jennifer.dewerk@teck.com X X X		
City Sparwood Province BC			City Calgary Province AB			Email 3: teckcoal@equisonline.com X X X		
Postal Code V0B 2G0 Country Canada			Postal Code T1Y 7B5 Country Canada			Email 4: X X X		
Phone Number 250-865-5289			Phone Number 403-407-1800			PO number 618734		

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-01-07_WP_Q3-2019_NP	RG_DW-01-07	WP	N	22-Aug-19	9:50	G	7	1	1	1	1	1	1	1



<b>ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS</b>	<b>RELINQUISHED BY/AFFILIATION</b>	<b>DATE/TIME</b>	<b>ACCEPTED BY/AFFILIATION</b>	<b>DATE/TIME</b>
			<i>[Signature]</i>	8/23 8:45

<b>SERVICE REQUEST (rush ? subject to availability)</b>		<b>SAMPLER'S INFO</b>	
Regular (default) X	Priority (2-3 business days) - 50% surcharge	Sampler's Name	AARON GLOVER / JENNIFER DE WERK
Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	<i>[Signature]</i>
		Mobile #	250-910-7287
		Date/Time	Aug 22/19 11:30

8<sup>c</sup>





Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 21-AUG-19  
Report Date: 28-AUG-19 16:29 (MT)  
Version: DRAFT

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2333738  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 02-20  
Legal Site Desc:

DRAFT

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2333738-1 WP 20-AUG-19 08:53 RG_DW-02- 20_WP_Q3- 2019_NP				
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	460				
	Hardness (as CaCO3) (mg/L)	240				
	pH (pH)	8.19				
	ORP (mV)	380				
	Total Suspended Solids (mg/L)	2.8				
	Total Dissolved Solids (mg/L)	280 <sup>DLHC</sup>				
	Turbidity (NTU)	1.12				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.0				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	169				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	169				
	Ammonia as N (mg/L)	<0.0050				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	1.77				
	Fluoride (F) (mg/L)	0.169				
	Ion Balance (%)	98.9				
	Nitrate (as N) (mg/L)	2.22				
	Nitrite (as N) (mg/L)	<0.0010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	67.1				
	Anion Sum (meq/L)	4.99				
	Cation Sum (meq/L)	4.93				
	Cation - Anion Balance (%)	-0.5				
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50			
		Total Organic Carbon (mg/L)	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	<0.00010				
	Barium (Ba)-Total (mg/L)	0.0875				
	Beryllium (Be)-Total (ug/L)	<0.020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	<0.010				
	Cadmium (Cd)-Total (ug/L)	0.0097				
	Calcium (Ca)-Total (mg/L)	66.7				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L2333738-1 WP 20-AUG-19 08:53 RG_DW-02- 20_WP_Q3- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Chromium (Cr)-Total (mg/L)	0.00022			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00618			
	Iron (Fe)-Total (mg/L)	0.124			
	Lead (Pb)-Total (mg/L)	0.000236			
	Lithium (Li)-Total (mg/L)	0.0071			
	Magnesium (Mg)-Total (mg/L)	19.3			
	Manganese (Mn)-Total (mg/L)	0.00264			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00111			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.584			
	Selenium (Se)-Total (ug/L)	10.1			
	Silicon (Si)-Total (mg/L)	2.34			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.59			
	Strontium (Sr)-Total (mg/L)	0.236			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00104			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0162			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0853			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0071			
	Calcium (Ca)-Dissolved (mg/L)	63.0			
	Chromium (Cr)-Dissolved (mg/L)	0.00019			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	0.00548			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2333738-1 WP 20-AUG-19 08:53 RG_DW-02- 20_WP_Q3- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000143			
	Lithium (Li)-Dissolved (mg/L)	0.0067			
	Magnesium (Mg)-Dissolved (mg/L)	20.2			
	Manganese (Mn)-Dissolved (mg/L)	0.00110			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00105			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.629			
	Selenium (Se)-Dissolved (ug/L)	11.5			
	Silicon (Si)-Dissolved (mg/L)	2.36			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.64			
	Strontium (Sr)-Dissolved (mg/L)	0.226			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00106			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0112			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2333738-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333738-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2333738-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2333738-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333738-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2333738-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2333738-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333738-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333738-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2333738-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2333738-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2333738-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2333738-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2333738-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p>			

## Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) =  $[\text{Cation Sum} - \text{Anion Sum}] / [\text{Cation Sum} + \text{Anion Sum}]$

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

02-20

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 1 of 11

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4768538							
<b>WG3143216-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	23-AUG-19
<b>WG3143216-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	23-AUG-19
<b>WG3143229-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4769111							
<b>WG3142654-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4767864							
<b>WG3142316-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			107.2		%		80-120	24-AUG-19
<b>WG3142316-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	24-AUG-19
<b>WG3142316-4</b>	<b>MS</b>	<b>L2333738-1</b>						
Beryllium (Be)-Total			96.7		%		70-130	24-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.3		%		80-120	25-AUG-19
<b>WG3143132-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							

DRAFT





## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 2 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-2</b>	<b>LCS</b>							
Total Organic Carbon			97.1		%		80-120	25-AUG-19
<b>WG3143132-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	23-AUG-19
<b>WG3143229-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4769372							
<b>WG3144665-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.7		%		80-120	27-AUG-19
<b>WG3144665-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-AUG-19
<b>WG3144665-4</b>	<b>MS</b>	<b>L2333738-1</b>						
Mercury (Hg)-Dissolved			96.8		%		70-130	27-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4771009							
<b>WG3145413-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.6		%		80-120	28-AUG-19
<b>WG3145413-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 3 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.7		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.7		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			95.6		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			94.9		%		80-120	25-AUG-19
Boron (B)-Dissolved			111.5		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			96.7		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.6		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.8		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.2		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			98.6		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			99.2		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			96.7		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			95.4		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.3		%		80-120	25-AUG-19
Potassium (K)-Dissolved			97.3		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			103.4		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			107.1		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.8		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			100.2		%		80-120	25-AUG-19
Strontium (Sr)-Dissolved			98.5		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			97.9		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			95.0		%		80-120	25-AUG-19
Uranium (U)-Dissolved			103.8		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.3		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 4 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			107.2		%		80-120	24-AUG-19
Antimony (Sb)-Total			101.8		%		80-120	24-AUG-19
Arsenic (As)-Total			102.7		%		80-120	24-AUG-19
Barium (Ba)-Total			104.0		%		80-120	24-AUG-19



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 5 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			101.5		%		80-120	24-AUG-19
Boron (B)-Total			101.8		%		80-120	24-AUG-19
Cadmium (Cd)-Total			101.8		%		80-120	24-AUG-19
Calcium (Ca)-Total			103.2		%		80-120	24-AUG-19
Chromium (Cr)-Total			106.4		%		80-120	24-AUG-19
Cobalt (Co)-Total			101.8		%		80-120	24-AUG-19
Copper (Cu)-Total			100.6		%		80-120	24-AUG-19
Iron (Fe)-Total			103.6		%		80-120	24-AUG-19
Lead (Pb)-Total			102.6		%		80-120	24-AUG-19
Lithium (Li)-Total			105.9		%		80-120	24-AUG-19
Magnesium (Mg)-Total			104.7		%		80-120	24-AUG-19
Manganese (Mn)-Total			104.2		%		80-120	24-AUG-19
Molybdenum (Mo)-Total			104.0		%		80-120	24-AUG-19
Nickel (Ni)-Total			101.1		%		80-120	24-AUG-19
Potassium (K)-Total			104.0		%		80-120	24-AUG-19
Selenium (Se)-Total			97.2		%		80-120	24-AUG-19
Silicon (Si)-Total			105.0		%		80-120	24-AUG-19
Silver (Ag)-Total			99.98		%		80-120	24-AUG-19
Sodium (Na)-Total			107.2		%		80-120	24-AUG-19
Strontium (Sr)-Total			104.6		%		80-120	24-AUG-19
Thallium (Tl)-Total			103.4		%		80-120	24-AUG-19
Tin (Sn)-Total			101.8		%		80-120	24-AUG-19
Titanium (Ti)-Total			103.2		%		80-120	24-AUG-19
Uranium (U)-Total			106.0		%		80-120	24-AUG-19
Vanadium (V)-Total			104.6		%		80-120	24-AUG-19
Zinc (Zn)-Total			104.7		%		80-120	24-AUG-19
<b>WG3142316-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	24-AUG-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	24-AUG-19



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 6 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	24-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	24-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	24-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	24-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-AUG-19
<b>WG3142316-4</b>	<b>MS</b>	<b>L2333738-1</b>						
Aluminum (Al)-Total			98.1		%		70-130	24-AUG-19
Antimony (Sb)-Total			103.3		%		70-130	24-AUG-19
Arsenic (As)-Total			101.1		%		70-130	24-AUG-19
Barium (Ba)-Total			N/A	MS-B	%		-	24-AUG-19
Bismuth (Bi)-Total			92.8		%		70-130	24-AUG-19
Boron (B)-Total			93.9		%		70-130	24-AUG-19
Cadmium (Cd)-Total			101.2		%		70-130	24-AUG-19
Calcium (Ca)-Total			N/A	MS-B	%		-	24-AUG-19
Chromium (Cr)-Total			99.1		%		70-130	24-AUG-19
Cobalt (Co)-Total			97.3		%		70-130	24-AUG-19



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-4</b>	<b>MS</b>	<b>L2333738-1</b>						
Copper (Cu)-Total			94.2		%		70-130	24-AUG-19
Iron (Fe)-Total			100.5		%		70-130	24-AUG-19
Lead (Pb)-Total			92.0		%		70-130	24-AUG-19
Lithium (Li)-Total			97.6		%		70-130	24-AUG-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	24-AUG-19
Manganese (Mn)-Total			101.0		%		70-130	24-AUG-19
Molybdenum (Mo)-Total			104.6		%		70-130	24-AUG-19
Nickel (Ni)-Total			96.1		%		70-130	24-AUG-19
Potassium (K)-Total			97.6		%		70-130	24-AUG-19
Selenium (Se)-Total			99.9		%		70-130	24-AUG-19
Silicon (Si)-Total			96.9		%		70-130	24-AUG-19
Silver (Ag)-Total			104.5		%		70-130	24-AUG-19
Sodium (Na)-Total			N/A	MS-B	%		-	24-AUG-19
Strontium (Sr)-Total			N/A	MS-B	%		-	24-AUG-19
Thallium (Tl)-Total			94.6		%		70-130	24-AUG-19
Tin (Sn)-Total			102.5		%		70-130	24-AUG-19
Titanium (Ti)-Total			99.1		%		70-130	24-AUG-19
Uranium (U)-Total			95.7		%		70-130	24-AUG-19
Vanadium (V)-Total			100.4		%		70-130	24-AUG-19
Zinc (Zn)-Total			100.7		%		70-130	24-AUG-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769664</b>							
<b>WG3143694-34</b>	<b>LCS</b>							
Ammonia as N			104.0		%		85-115	26-AUG-19
<b>WG3143694-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrite (as N)			105.9		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19
<b>NO3-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 8 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4769169							
<b>WG3143970-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4767467							
<b>WG3141919-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.8		%		80-120	23-AUG-19
<b>WG3141919-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4765949							
<b>WG3140634-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	22-AUG-19
<b>WG3140634-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4768912							
<b>WG3143234-12</b>	<b>LCS</b>							
Total Dissolved Solids			99.7		%		85-115	26-AUG-19
<b>WG3143234-11</b>	<b>MB</b>							

DRAFT



## Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
<b>Water</b>								
Batch	R4768912							
<b>WG3143234-11 MB</b>								
Total Dissolved Solids			<10		mg/L		10	26-AUG-19
<b>TSS-L-CL</b>								
<b>Water</b>								
Batch	R4768837							
<b>WG3143202-12 LCS</b>								
Total Suspended Solids			92.3		%		85-115	26-AUG-19
<b>WG3143202-11 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>								
<b>Water</b>								
Batch	R4765274							
<b>WG3140978-8 LCS</b>								
Turbidity			94.0		%		85-115	22-AUG-19
<b>WG3140978-7 MB</b>								
Turbidity			<0.10		NTU		0.1	22-AUG-19

DRAFT



# Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 10 of 11

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

---

DRAFT

# Quality Control Report

Workorder: L2333738

Report Date: 28-AUG-19

Page 11 of 11

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	20-AUG-19 08:53	26-AUG-19 14:45	0.25	150	hours	EHTR-FM
pH	1	20-AUG-19 08:53	23-AUG-19 13:00	0.25	76	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333738 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

# Teck

COC ID: **02-20\_Q3-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TRN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA
RG_DW-02-20_WP_Q3-2019_NP	RG_DW-02-20	WP	N	Aug 20	8:53	G	7	1	1	1	1	1	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			OK	8/21 0900

SERVICE REQUEST (rush - subject to availability)	Sampler's Name	Mobile #
Regular (default) X Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	Jennifer de Werk	250-910-7287

Sampler's Signature: *Jennifer de Werk*      Date/Time: Aug 20, 19  
*JOL*



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 21-AUG-19  
Report Date: 28-AUG-19 16:28 (MT)  
Version: DRAFT

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2333732  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-01  
Legal Site Desc:

DRAFT

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2333732-1 WP 20-AUG-19 11:05 RG_DW-03-01_WP_Q3-2019_NP				
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	822				
	Hardness (as CaCO3) (mg/L)	428				
	pH (pH)	8.21				
	ORP (mV)	315				
	Total Suspended Solids (mg/L)	2.7				
	Total Dissolved Solids (mg/L)	518 <sup>DLHC</sup>				
	Turbidity (NTU)	4.11				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	15.7				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	351				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	351				
	Ammonia as N (mg/L)	0.0056				
	Bromide (Br) (mg/L)	0.096				
	Chloride (Cl) (mg/L)	36.7				
	Fluoride (F) (mg/L)	0.149				
	Ion Balance (%)	98.6				
	Nitrate (as N) (mg/L)	0.0550				
	Nitrite (as N) (mg/L)	<0.0010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	64.4				
	Anion Sum (meq/L)	9.41				
	Cation Sum (meq/L)	9.28				
	Cation - Anion Balance (%)	-0.7				
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.87			
		Total Organic Carbon (mg/L)	1.22			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0549				
	Antimony (Sb)-Total (mg/L)	<0.00010				
	Arsenic (As)-Total (mg/L)	0.00011				
	Barium (Ba)-Total (mg/L)	0.117				
	Beryllium (Be)-Total (ug/L)	<0.020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	0.042				
	Cadmium (Cd)-Total (ug/L)	0.0770				
	Calcium (Ca)-Total (mg/L)	121				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L2333732-1 WP 20-AUG-19 11:05 RG_DW-03-01_WP_Q3-2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Chromium (Cr)-Total (mg/L)	0.00013			
	Cobalt (Co)-Total (ug/L)	0.15			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	0.465			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0219			
	Magnesium (Mg)-Total (mg/L)	35.6			
	Manganese (Mn)-Total (mg/L)	0.220			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00298			
	Nickel (Ni)-Total (mg/L)	0.00279			
	Potassium (K)-Total (mg/L)	2.04			
	Selenium (Se)-Total (ug/L)	0.141			
	Silicon (Si)-Total (mg/L)	5.09			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	15.2			
	Strontium (Sr)-Total (mg/L)	0.469			
	Thallium (Tl)-Total (mg/L)	0.000103			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00107			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.115			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.044			
	Cadmium (Cd)-Dissolved (ug/L)	0.0712			
	Calcium (Ca)-Dissolved (mg/L)	112			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (ug/L)	0.13			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2333732-1 WP 20-AUG-19 11:05 RG_DW-03-01_WP_Q3-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Iron (Fe)-Dissolved (mg/L)	0.174			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0203			
	Magnesium (Mg)-Dissolved (mg/L)	35.9			
	Manganese (Mn)-Dissolved (mg/L)	0.204			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00288			
	Nickel (Ni)-Dissolved (mg/L)	0.00259			
	Potassium (K)-Dissolved (mg/L)	2.08			
	Selenium (Se)-Dissolved (ug/L)	0.155			
	Silicon (Si)-Dissolved (mg/L)	4.71			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	15.0			
	Strontium (Sr)-Dissolved (mg/L)	0.425			
	Thallium (Tl)-Dissolved (mg/L)	0.000100			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00106			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0018			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2333732-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333732-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2333732-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2333732-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333732-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2333732-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2333732-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333732-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333732-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2333732-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2333732-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2333732-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2333732-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2333732-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2333732-1

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			



## Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

03-01

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4768538							
<b>WG3143216-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	23-AUG-19
<b>WG3143216-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	23-AUG-19
<b>WG3143229-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4769111							
<b>WG3142654-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4767864							
<b>WG3142314-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.5		%		80-120	24-AUG-19
<b>WG3142314-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	24-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-6</b>	<b>LCS</b>							
Bromide (Br)			108.4		%		85-115	22-AUG-19
<b>WG3141969-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4769509							
<b>WG3144493-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			101.4		%		80-120	26-AUG-19
<b>WG3144493-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							

DRAFT



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4769509							
WG3144493-2	LCS							
Total Organic Carbon			103.9		%		80-120	26-AUG-19
WG3144493-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	26-AUG-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4767516							
WG3141969-6	LCS							
Chloride (Cl)			101.5		%		90-110	22-AUG-19
WG3141969-5	MB							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4768557							
WG3143229-2	LCS							
Conductivity (@ 25C)			100.1		%		90-110	23-AUG-19
WG3143229-1	MB							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4767516							
WG3141969-6	LCS							
Fluoride (F)			102.5		%		90-110	22-AUG-19
WG3141969-5	MB							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4769372							
WG3144665-3	DUP	L2333732-1						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	27-AUG-19
WG3144665-2	LCS							
Mercury (Hg)-Dissolved			96.7		%		80-120	27-AUG-19
WG3144665-1	MB							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-AUG-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch	R4771009							
WG3145413-2	LCS							
Mercury (Hg)-Total			99.6		%		80-120	28-AUG-19
WG3145413-1	MB							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-AUG-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.7		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.7		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			95.6		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			94.9		%		80-120	25-AUG-19
Boron (B)-Dissolved			111.5		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			96.7		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.6		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.8		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.2		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			98.6		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			99.2		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			96.7		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			95.4		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.3		%		80-120	25-AUG-19
Potassium (K)-Dissolved			97.3		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			103.4		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			107.1		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.8		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			100.2		%		80-120	25-AUG-19
Strontium (Sr)-Dissolved			98.5		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			97.9		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			95.0		%		80-120	25-AUG-19
Uranium (U)-Dissolved			103.8		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.3		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142314-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			98.0		%		80-120	24-AUG-19
Antimony (Sb)-Total			104.2		%		80-120	24-AUG-19
Arsenic (As)-Total			96.2		%		80-120	24-AUG-19
Barium (Ba)-Total			99.4		%		80-120	24-AUG-19



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142314-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			101.0		%		80-120	24-AUG-19
Boron (B)-Total			97.6		%		80-120	24-AUG-19
Cadmium (Cd)-Total			100.6		%		80-120	24-AUG-19
Calcium (Ca)-Total			100.8		%		80-120	24-AUG-19
Chromium (Cr)-Total			100.6		%		80-120	24-AUG-19
Cobalt (Co)-Total			99.2		%		80-120	24-AUG-19
Copper (Cu)-Total			95.0		%		80-120	24-AUG-19
Iron (Fe)-Total			98.5		%		80-120	24-AUG-19
Lead (Pb)-Total			101.3		%		80-120	24-AUG-19
Lithium (Li)-Total			99.0		%		80-120	24-AUG-19
Magnesium (Mg)-Total			96.4		%		80-120	24-AUG-19
Manganese (Mn)-Total			101.3		%		80-120	24-AUG-19
Molybdenum (Mo)-Total			105.8		%		80-120	24-AUG-19
Nickel (Ni)-Total			98.3		%		80-120	24-AUG-19
Potassium (K)-Total			97.4		%		80-120	24-AUG-19
Selenium (Se)-Total			95.3		%		80-120	24-AUG-19
Silicon (Si)-Total			100.0		%		80-120	24-AUG-19
Silver (Ag)-Total			103.0		%		80-120	24-AUG-19
Sodium (Na)-Total			97.2		%		80-120	24-AUG-19
Strontium (Sr)-Total			108.0		%		80-120	24-AUG-19
Thallium (Tl)-Total			103.0		%		80-120	24-AUG-19
Tin (Sn)-Total			99.0		%		80-120	24-AUG-19
Titanium (Ti)-Total			95.0		%		80-120	24-AUG-19
Uranium (U)-Total			102.0		%		80-120	24-AUG-19
Vanadium (V)-Total			98.0		%		80-120	24-AUG-19
Zinc (Zn)-Total			100.2		%		80-120	24-AUG-19
<b>WG3142314-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	24-AUG-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	24-AUG-19



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142314-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	24-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	24-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	24-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	24-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769664</b>							
<b>WG3143694-30</b>	<b>LCS</b>							
Ammonia as N			104.5		%		85-115	26-AUG-19
<b>WG3143694-29</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-6</b>	<b>LCS</b>							
Nitrite (as N)			105.2		%		90-110	22-AUG-19
<b>WG3141969-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19





## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-6</b>	<b>LCS</b>							
Nitrate (as N)			102.9		%		90-110	22-AUG-19
<b>WG3141969-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4769169							
<b>WG3143970-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4767467							
<b>WG3141919-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.8		%		80-120	23-AUG-19
<b>WG3141919-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4765949							
<b>WG3140634-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	22-AUG-19
<b>WG3140634-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-6</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	22-AUG-19
<b>WG3141969-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4768912							
<b>WG3143234-12</b>	<b>LCS</b>							
Total Dissolved Solids			99.7		%		85-115	26-AUG-19
<b>WG3143234-11</b>	<b>MB</b>							

DRAFT



## Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4768912							
<b>WG3143234-11 MB</b>								
Total Dissolved Solids			<10		mg/L		10	26-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4768837							
<b>WG3143202-12 LCS</b>								
Total Suspended Solids			92.3		%		85-115	26-AUG-19
<b>WG3143202-11 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4765274							
<b>WG3140978-8 LCS</b>								
Turbidity			94.0		%		85-115	22-AUG-19
<b>WG3140978-7 MB</b>								
Turbidity			<0.10		NTU		0.1	22-AUG-19

DRAFT

# Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

DRAFT

# Quality Control Report

Workorder: L2333732

Report Date: 28-AUG-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	20-AUG-19 11:05	26-AUG-19 14:45	0.25	148	hours	EHTR-FM
pH	1	20-AUG-19 11:05	23-AUG-19 13:00	0.25	74	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333732 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-01\_Q3-2019**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets			Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:				X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:				
Phone Number	250-865-5289			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS								ANALYSIS REQUESTED														
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA	F	N	F	N	F	N	N	
RG_DW-03-01_WP_Q3-2019_NP	RG_DW-03-01	WP	N	20-Aug-19	11:08	G	7	1	1	1	1	1	1	1	1							

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME

OK | 8/21 09:00

SERVICE REQUEST (rush subject to availability)

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jennifer Dewerk	Mobile #	250-910-7287
				Sampler's Signature	[Signature]	Date/Time	Aug 20, 19

8/20



Teck Coal Ltd.  
ATTN: Allie Ferguson  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 21-AUG-19  
Report Date: 28-AUG-19 16:30 (MT)  
Version: DRAFT

Client Phone: 250-425-8048

## Certificate of Analysis

Lab Work Order #: L2333754  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-04-Q3-2019  
Legal Site Desc:

DRAFT

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2333754-1 WP 20-AUG-19 12:49 RG_DW-03-04_WP_Q3-2019_NP				
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	433				
	Hardness (as CaCO3) (mg/L)	212				
	pH (pH)	8.20				
	ORP (mV)	336				
	Total Suspended Solids (mg/L)	<1.0				
	Total Dissolved Solids (mg/L)	259 <sup>DLHC</sup>				
	Turbidity (NTU)	0.12				
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	3.9				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	164				
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0				
	Alkalinity, Total (as CaCO3) (mg/L)	164				
	Ammonia as N (mg/L)	<0.0050				
	Bromide (Br) (mg/L)	<0.050				
	Chloride (Cl) (mg/L)	9.64				
	Fluoride (F) (mg/L)	0.135				
	Ion Balance (%)	94.7				
	Nitrate (as N) (mg/L)	0.662				
	Nitrite (as N) (mg/L)	<0.0010				
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010				
	Phosphorus (P)-Total (mg/L)	<0.0020				
	Sulfate (SO4) (mg/L)	57.5				
	Anion Sum (meq/L)	4.81				
	Cation Sum (meq/L)	4.55				
	Cation - Anion Balance (%)	-2.7				
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	0.65			
		Total Organic Carbon (mg/L)	0.68			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030				
	Antimony (Sb)-Total (mg/L)	0.00013				
	Arsenic (As)-Total (mg/L)	0.00012				
	Barium (Ba)-Total (mg/L)	0.110				
	Beryllium (Be)-Total (ug/L)	<0.020				
	Bismuth (Bi)-Total (mg/L)	<0.000050				
	Boron (B)-Total (mg/L)	0.010				
	Cadmium (Cd)-Total (ug/L)	0.0136				
	Calcium (Ca)-Total (mg/L)	58.5				

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2333754-1 WP 20-AUG-19 12:49 RG_DW-03-04_WP_Q3-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Chromium (Cr)-Total (mg/L)	0.00017			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	<0.00050			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0088			
	Magnesium (Mg)-Total (mg/L)	19.0			
	Manganese (Mn)-Total (mg/L)	0.00015			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00118			
	Nickel (Ni)-Total (mg/L)	0.00067			
	Potassium (K)-Total (mg/L)	0.767			
	Selenium (Se)-Total (ug/L)	5.55			
	Silicon (Si)-Total (mg/L)	2.33			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	6.84			
	Strontium (Sr)-Total (mg/L)	0.128			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000864			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0038			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.108			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0124			
	Calcium (Ca)-Dissolved (mg/L)	53.6			
	Chromium (Cr)-Dissolved (mg/L)	0.00018			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			
	Copper (Cu)-Dissolved (mg/L)	<0.00050			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID		L2333754-1			
Description		WP			
Sampled Date		20-AUG-19			
Sampled Time		12:49			
Client ID		RG_DW-03-04_WP_Q3-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0082			
	Magnesium (Mg)-Dissolved (mg/L)	19.0			
	Manganese (Mn)-Dissolved (mg/L)	0.00015			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00111			
	Nickel (Ni)-Dissolved (mg/L)	0.00065			
	Potassium (K)-Dissolved (mg/L)	0.798			
	Selenium (Se)-Dissolved (ug/L)	5.88			
	Silicon (Si)-Dissolved (mg/L)	2.30			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	6.76			
	Strontium (Sr)-Dissolved (mg/L)	0.118			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000878			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0037			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2333754-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2333754-1
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2333754-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2333754-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2333754-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2333754-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2333754-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2333754-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2333754-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2333754-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2333754-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2333754-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2333754-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2333754-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

## Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

03-04-Q3-2019

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

< - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4768538							
<b>WG3143216-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			103.0		%		85-115	23-AUG-19
<b>WG3143216-1</b>	<b>MB</b>							
Acidity (as CaCO3)			<1.0		mg/L		2	23-AUG-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.4		%		85-115	23-AUG-19
<b>WG3143229-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	23-AUG-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4769111							
<b>WG3142654-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			97.5		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	NP						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	25-AUG-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4767864							
<b>WG3142316-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			107.2		%		80-120	24-AUG-19
<b>WG3142316-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	24-AUG-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Bromide (Br)			104.2		%		85-115	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	22-AUG-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.3		%		80-120	25-AUG-19
<b>WG3143132-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							

DRAFT



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4768411							
<b>WG3143132-2</b>	<b>LCS</b>							
Total Organic Carbon			97.1		%		80-120	25-AUG-19
<b>WG3143132-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	25-AUG-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Chloride (Cl)			101.6		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	22-AUG-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			100.1		%		90-110	23-AUG-19
<b>WG3143229-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	23-AUG-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Fluoride (F)			106.5		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	22-AUG-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4769372							
<b>WG3144665-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.7		%		80-120	27-AUG-19
<b>WG3144665-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	27-AUG-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4771009							
<b>WG3145413-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			99.6		%		80-120	28-AUG-19
<b>WG3145413-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-AUG-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							

DRAFT



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			96.5		%		80-120	25-AUG-19
Antimony (Sb)-Dissolved			98.7		%		80-120	25-AUG-19
Arsenic (As)-Dissolved			95.7		%		80-120	25-AUG-19
Barium (Ba)-Dissolved			95.6		%		80-120	25-AUG-19
Bismuth (Bi)-Dissolved			94.9		%		80-120	25-AUG-19
Boron (B)-Dissolved			111.5		%		80-120	25-AUG-19
Cadmium (Cd)-Dissolved			96.7		%		80-120	25-AUG-19
Calcium (Ca)-Dissolved			95.6		%		80-120	25-AUG-19
Chromium (Cr)-Dissolved			96.8		%		80-120	25-AUG-19
Cobalt (Co)-Dissolved			95.8		%		80-120	25-AUG-19
Copper (Cu)-Dissolved			95.2		%		80-120	25-AUG-19
Iron (Fe)-Dissolved			98.6		%		80-120	25-AUG-19
Lead (Pb)-Dissolved			99.2		%		80-120	25-AUG-19
Lithium (Li)-Dissolved			96.7		%		80-120	25-AUG-19
Magnesium (Mg)-Dissolved			98.5		%		80-120	25-AUG-19
Manganese (Mn)-Dissolved			95.4		%		80-120	25-AUG-19
Molybdenum (Mo)-Dissolved			95.7		%		80-120	25-AUG-19
Nickel (Ni)-Dissolved			95.3		%		80-120	25-AUG-19
Potassium (K)-Dissolved			97.3		%		80-120	25-AUG-19
Selenium (Se)-Dissolved			103.4		%		80-120	25-AUG-19
Silicon (Si)-Dissolved			107.1		%		60-140	25-AUG-19
Silver (Ag)-Dissolved			97.8		%		80-120	25-AUG-19
Sodium (Na)-Dissolved			100.2		%		80-120	25-AUG-19
Strontium (Sr)-Dissolved			98.5		%		80-120	25-AUG-19
Thallium (Tl)-Dissolved			97.9		%		80-120	25-AUG-19
Tin (Sn)-Dissolved			95.6		%		80-120	25-AUG-19
Titanium (Ti)-Dissolved			95.0		%		80-120	25-AUG-19
Uranium (U)-Dissolved			103.8		%		80-120	25-AUG-19
Vanadium (V)-Dissolved			98.1		%		80-120	25-AUG-19
Zinc (Zn)-Dissolved			96.3		%		80-120	25-AUG-19
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4769111</b>							
<b>WG3142654-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	25-AUG-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	25-AUG-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	25-AUG-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	25-AUG-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	25-AUG-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	25-AUG-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	25-AUG-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	25-AUG-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	25-AUG-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	25-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	25-AUG-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			107.2		%		80-120	24-AUG-19
Antimony (Sb)-Total			101.8		%		80-120	24-AUG-19
Arsenic (As)-Total			102.7		%		80-120	24-AUG-19
Barium (Ba)-Total			104.0		%		80-120	24-AUG-19





## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			101.5		%		80-120	24-AUG-19
Boron (B)-Total			101.8		%		80-120	24-AUG-19
Cadmium (Cd)-Total			101.8		%		80-120	24-AUG-19
Calcium (Ca)-Total			103.2		%		80-120	24-AUG-19
Chromium (Cr)-Total			106.4		%		80-120	24-AUG-19
Cobalt (Co)-Total			101.8		%		80-120	24-AUG-19
Copper (Cu)-Total			100.6		%		80-120	24-AUG-19
Iron (Fe)-Total			103.6		%		80-120	24-AUG-19
Lead (Pb)-Total			102.6		%		80-120	24-AUG-19
Lithium (Li)-Total			105.9		%		80-120	24-AUG-19
Magnesium (Mg)-Total			104.7		%		80-120	24-AUG-19
Manganese (Mn)-Total			104.2		%		80-120	24-AUG-19
Molybdenum (Mo)-Total			104.0		%		80-120	24-AUG-19
Nickel (Ni)-Total			101.1		%		80-120	24-AUG-19
Potassium (K)-Total			104.0		%		80-120	24-AUG-19
Selenium (Se)-Total			97.2		%		80-120	24-AUG-19
Silicon (Si)-Total			105.0		%		80-120	24-AUG-19
Silver (Ag)-Total			99.98		%		80-120	24-AUG-19
Sodium (Na)-Total			107.2		%		80-120	24-AUG-19
Strontium (Sr)-Total			104.6		%		80-120	24-AUG-19
Thallium (Tl)-Total			103.4		%		80-120	24-AUG-19
Tin (Sn)-Total			101.8		%		80-120	24-AUG-19
Titanium (Ti)-Total			103.2		%		80-120	24-AUG-19
Uranium (U)-Total			106.0		%		80-120	24-AUG-19
Vanadium (V)-Total			104.6		%		80-120	24-AUG-19
Zinc (Zn)-Total			104.7		%		80-120	24-AUG-19
<b>WG3142316-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	24-AUG-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	24-AUG-19



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767864</b>							
<b>WG3142316-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	24-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	24-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	24-AUG-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-AUG-19
Silicon (Si)-Total			<0.10		mg/L		0.1	24-AUG-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	24-AUG-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	24-AUG-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-AUG-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	24-AUG-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	24-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-AUG-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4769664</b>							
<b>WG3143694-34</b>	<b>LCS</b>							
Ammonia as N			104.0		%		85-115	26-AUG-19
<b>WG3143694-33</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	26-AUG-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4767516</b>							
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrite (as N)			105.9		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	22-AUG-19



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	22-AUG-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4769169							
<b>WG3143970-5</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			227		mV		210-230	26-AUG-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4767467							
<b>WG3141919-14</b>	<b>LCS</b>							
Phosphorus (P)-Total			106.8		%		80-120	23-AUG-19
<b>WG3141919-13</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	23-AUG-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4768557							
<b>WG3143229-2</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	23-AUG-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4765949							
<b>WG3140634-22</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			104.6		%		80-120	22-AUG-19
<b>WG3140634-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	22-AUG-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4767516							
<b>WG3141969-10</b>	<b>LCS</b>							
Sulfate (SO4)			101.2		%		90-110	22-AUG-19
<b>WG3141969-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4768912							
<b>WG3143234-12</b>	<b>LCS</b>							
Total Dissolved Solids			99.7		%		85-115	26-AUG-19
<b>WG3143234-11</b>	<b>MB</b>							

DRAFT



## Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4768912							
<b>WG3143234-11 MB</b>								
Total Dissolved Solids			<10		mg/L		10	26-AUG-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4768837							
<b>WG3143202-12 LCS</b>								
Total Suspended Solids			92.3		%		85-115	26-AUG-19
<b>WG3143202-11 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	26-AUG-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4765274							
<b>WG3140978-8 LCS</b>								
Turbidity			94.0		%		85-115	22-AUG-19
<b>WG3140978-7 MB</b>								
Turbidity			<0.10		NTU		0.1	22-AUG-19

DRAFT

# Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

DRAFT

# Quality Control Report

Workorder: L2333754

Report Date: 28-AUG-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	20-AUG-19 12:49	26-AUG-19 14:45	0.25	146	hours	EHTR-FM
pH	1	20-AUG-19 12:49	23-AUG-19 13:00	0.25	72	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2333754 were received on 21-AUG-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-04-Q3-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary		Report Format / Distribution		Excel	PDF	EDD
Project Manager	Allie Ferguson			Lab Contact	Lyudmyla Shvets		Email 1:	Allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	lyudmyla.shvets@alsglobal.com		Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE		Email 3:	teckcoal@equisonline.com	X	X	X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 4:			X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada	Email 5:			
Phone Number	250-865-5289			Phone Number	403-407-1800		PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED												
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	FILE	F	N	F	N	F	N	N				
RG_DW-03-04_WP_Q3-2019_NP	RG_DW-03-04	WP	N	20-Aug-19	12:49	G	7	FILE											
								PROPERTY	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3					
								ANALYSIS	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			<i>DK</i>	<i>8/21 0900</i>

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> Priority (2-3 business days) - 50% surcharge Emergency (1 Business Day) - 100% surcharge For Emergency <1 Day, ASAP or Weekend - Contact ALS	<i>Jennifer Dewerk</i>	250-910-7287
	<i>[Signature]</i>	Aug 20, 19



L2333754-COFC

*1546*

*702*



Teck Coal Ltd.  
ATTN: Cam Jaeger  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 26-NOV-19  
Report Date: 30-NOV-19 10:27 (MT)  
Version: FINAL

Client Phone: 250-425-8449

## Certificate of Analysis

Lab Work Order #: L2387922  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-03\_Q4-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2387922-1 WP 25-NOV-19 08:45 RG_DW-01- 03_WP_Q4- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	343			
	Hardness (as CaCO3) (mg/L)	178			
	pH (pH)	8.15			
	ORP (mV)	435			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	195 <sup>DLHC</sup>			
	Turbidity (NTU)	0.35			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	152			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	0.97			
	Fluoride (F) (mg/L)	0.145			
	Ion Balance (%)	92.0			
	Nitrate (as N) (mg/L)	0.777			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.205			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0014			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	37.8			
	Anion Sum (meq/L)	3.92			
	Cation Sum (meq/L)	3.61			
	Cation - Anion Balance (%)	-4.2			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50		
Total Organic Carbon (mg/L)		<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00013			
	Barium (Ba)-Total (mg/L)	0.0733			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0175			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2387922-1 WP 25-NOV-19 08:45 RG_DW-01- 03_WP_Q4- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	58.0			
	Chromium (Cr)-Total (mg/L)	0.00029			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00149			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	0.000155			
	Lithium (Li)-Total (mg/L)	0.0026			
	Magnesium (Mg)-Total (mg/L)	13.7			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.000957			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.430			
	Selenium (Se)-Total (ug/L)	3.68			
	Silicon (Si)-Total (mg/L)	2.19			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	1.32			
	Strontium (Sr)-Total (mg/L)	0.225			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000799			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0210			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0714			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0115			
	Calcium (Ca)-Dissolved (mg/L)	50.2			
	Chromium (Cr)-Dissolved (mg/L)	0.00025			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID	Description	Sampled Date	Sampled Time	Client ID
		L2387922-1	WP	25-NOV-19	08:45	RG_DW-01-03_WP_Q4-2019_NP
<b>WATER</b>						
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)			0.00131		
	Iron (Fe)-Dissolved (mg/L)			<0.010		
	Lead (Pb)-Dissolved (mg/L)			0.000102		
	Lithium (Li)-Dissolved (mg/L)			0.0022		
	Magnesium (Mg)-Dissolved (mg/L)			12.7		
	Manganese (Mn)-Dissolved (mg/L)			<0.00010		
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)			0.000959		
	Nickel (Ni)-Dissolved (mg/L)			<0.00050		
	Potassium (K)-Dissolved (mg/L)			0.392		
	Selenium (Se)-Dissolved (ug/L)			3.56		
	Silicon (Si)-Dissolved (mg/L)			2.10		
	Silver (Ag)-Dissolved (mg/L)			<0.000010		
	Sodium (Na)-Dissolved (mg/L)			1.15		
	Strontium (Sr)-Dissolved (mg/L)			0.188		
	Thallium (Tl)-Dissolved (mg/L)			<0.000010		
	Tin (Sn)-Dissolved (mg/L)			<0.00010		
	Titanium (Ti)-Dissolved (mg/L)			<0.010		
	Uranium (U)-Dissolved (mg/L)			0.000797		
	Vanadium (V)-Dissolved (mg/L)			<0.00050		
	Zinc (Zn)-Dissolved (mg/L)			0.0231		

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2387922-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2387922-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2387922-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2387922-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2387922-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L2387922-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2387922-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2387922-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B

## Reference Information

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

## Reference Information

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

---

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

01-03\_Q4-2019

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926867</b>							
<b>WG3229600-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.2		%		85-115	27-NOV-19
<b>WG3229600-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	27-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927809</b>							
<b>WG3230595-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			96.5		%		80-120	29-NOV-19
<b>WG3231587-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	29-NOV-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.5		%		80-120	29-NOV-19
<b>WG3231268-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926915</b>							
<b>WG3229650-10</b>	<b>LCS</b>							
Bromide (Br)			96.0		%		85-115	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928453</b>							
<b>WG3231567-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			98.0		%		80-120	28-NOV-19
<b>WG3231567-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	28-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4928453							
<b>WG3231567-2</b>	<b>LCS</b>							
Total Organic Carbon			99.0		%		80-120	28-NOV-19
<b>WG3231567-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4927809							
<b>WG3230595-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.5		%		90-110	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Fluoride (F)			100.9		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4927420							
<b>WG3230563-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.0		%		80-120	28-NOV-19
<b>WG3230563-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-19
<b>WG3230563-8</b>	<b>MS</b>	<b>L2387922-1</b>						
Mercury (Hg)-Dissolved			92.6		%		70-130	28-NOV-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4927420							
<b>WG3230224-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.9		%		80-120	28-NOV-19
<b>WG3230224-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-NOV-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							





## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.7		%		80-120	29-NOV-19
Antimony (Sb)-Dissolved			91.1		%		80-120	29-NOV-19
Arsenic (As)-Dissolved			96.2		%		80-120	29-NOV-19
Barium (Ba)-Dissolved			98.9		%		80-120	29-NOV-19
Bismuth (Bi)-Dissolved			93.8		%		80-120	29-NOV-19
Boron (B)-Dissolved			100.0		%		80-120	29-NOV-19
Cadmium (Cd)-Dissolved			99.3		%		80-120	29-NOV-19
Calcium (Ca)-Dissolved			100.4		%		80-120	29-NOV-19
Chromium (Cr)-Dissolved			103.4		%		80-120	29-NOV-19
Cobalt (Co)-Dissolved			97.6		%		80-120	29-NOV-19
Copper (Cu)-Dissolved			95.0		%		80-120	29-NOV-19
Iron (Fe)-Dissolved			101.0		%		80-120	29-NOV-19
Lead (Pb)-Dissolved			98.9		%		80-120	29-NOV-19
Lithium (Li)-Dissolved			99.0		%		80-120	29-NOV-19
Magnesium (Mg)-Dissolved			97.9		%		80-120	29-NOV-19
Manganese (Mn)-Dissolved			99.5		%		80-120	29-NOV-19
Molybdenum (Mo)-Dissolved			100.5		%		80-120	29-NOV-19
Nickel (Ni)-Dissolved			96.0		%		80-120	29-NOV-19
Potassium (K)-Dissolved			99.5		%		80-120	29-NOV-19
Selenium (Se)-Dissolved			100.7		%		80-120	29-NOV-19
Silicon (Si)-Dissolved			105.6		%		60-140	29-NOV-19
Silver (Ag)-Dissolved			99.9		%		80-120	29-NOV-19
Sodium (Na)-Dissolved			98.9		%		80-120	29-NOV-19
Strontium (Sr)-Dissolved			92.7		%		80-120	29-NOV-19
Thallium (Tl)-Dissolved			97.6		%		80-120	29-NOV-19
Tin (Sn)-Dissolved			99.7		%		80-120	29-NOV-19
Titanium (Ti)-Dissolved			94.3		%		80-120	29-NOV-19
Uranium (U)-Dissolved			100.4		%		80-120	29-NOV-19
Vanadium (V)-Dissolved			101.2		%		80-120	29-NOV-19
Zinc (Zn)-Dissolved			102.0		%		80-120	29-NOV-19
<b>WG3231587-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928726</b>							
<b>WG3231587-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	29-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	29-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	29-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	29-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	29-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	29-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	29-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	29-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	29-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	29-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	29-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	29-NOV-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.4		%		80-120	29-NOV-19
Antimony (Sb)-Total			103.4		%		80-120	29-NOV-19
Arsenic (As)-Total			102.0		%		80-120	29-NOV-19
Barium (Ba)-Total			105.5		%		80-120	29-NOV-19



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			117.2		%		80-120	29-NOV-19
Boron (B)-Total			94.1		%		80-120	29-NOV-19
Cadmium (Cd)-Total			103.4		%		80-120	29-NOV-19
Calcium (Ca)-Total			101.6		%		80-120	29-NOV-19
Chromium (Cr)-Total			105.5		%		80-120	29-NOV-19
Cobalt (Co)-Total			103.3		%		80-120	29-NOV-19
Copper (Cu)-Total			104.1		%		80-120	29-NOV-19
Iron (Fe)-Total			96.0		%		80-120	29-NOV-19
Lead (Pb)-Total			102.5		%		80-120	29-NOV-19
Lithium (Li)-Total			97.6		%		80-120	29-NOV-19
Magnesium (Mg)-Total			102.0		%		80-120	29-NOV-19
Manganese (Mn)-Total			106.3		%		80-120	29-NOV-19
Molybdenum (Mo)-Total			101.9		%		80-120	29-NOV-19
Nickel (Ni)-Total			104.4		%		80-120	29-NOV-19
Potassium (K)-Total			104.8		%		80-120	29-NOV-19
Selenium (Se)-Total			112.0		%		80-120	29-NOV-19
Silicon (Si)-Total			104.9		%		80-120	29-NOV-19
Silver (Ag)-Total			102.2		%		80-120	29-NOV-19
Sodium (Na)-Total			112.7		%		80-120	29-NOV-19
Strontium (Sr)-Total			107.6		%		80-120	29-NOV-19
Thallium (Tl)-Total			101.7		%		80-120	29-NOV-19
Tin (Sn)-Total			100.5		%		80-120	29-NOV-19
Titanium (Ti)-Total			101.4		%		80-120	29-NOV-19
Uranium (U)-Total			102.5		%		80-120	29-NOV-19
Vanadium (V)-Total			106.5		%		80-120	29-NOV-19
Zinc (Zn)-Total			103.6		%		80-120	29-NOV-19
<b>WG3231268-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	29-NOV-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	29-NOV-19



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	29-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	29-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	29-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	29-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-NOV-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4927156</b>							
<b>WG3229901-6</b>	<b>LCS</b>							
Ammonia as N			91.6		%		85-115	27-NOV-19
<b>WG3229901-5</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-NOV-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4926915</b>							
<b>WG3229650-10</b>	<b>LCS</b>							
Nitrite (as N)			96.2		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-19



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4927295							
<b>WG3228967-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	26-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4928098							
<b>WG3230708-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	28-NOV-19
<b>WG3230708-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4927809							
<b>WG3230595-5</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	27-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4925306							
<b>WG3228641-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	26-NOV-19
<b>WG3228641-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Sulfate (SO4)			105.3		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4927708							
<b>WG3229823-2</b>	<b>LCS</b>							
Total Dissolved Solids			98.5		%		85-115	27-NOV-19
<b>WG3229823-1</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TDS-CL</b>								
Water								
Batch R4927708								
WG3229823-1 MB								
Total Dissolved Solids			<10		mg/L		10	27-NOV-19
<b>TKN-L-F-CL</b>								
Water								
Batch R4927113								
WG3229857-15 DUP								
Total Kjeldahl Nitrogen		L2387922-1 0.205	0.180		mg/L	13	20	27-NOV-19
WG3229857-14 LCS								
Total Kjeldahl Nitrogen			103.3		%		75-125	27-NOV-19
WG3229857-13 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-19
WG3229857-16 MS								
Total Kjeldahl Nitrogen		L2387922-1	121.6		%		70-130	27-NOV-19
<b>TSS-L-CL</b>								
Water								
Batch R4927767								
WG3229463-4 LCS								
Total Suspended Solids			93.7		%		85-115	27-NOV-19
WG3229463-3 MB								
Total Suspended Solids			<1.0		mg/L		1	27-NOV-19
<b>TURBIDITY-CL</b>								
Water								
Batch R4926706								
WG3228854-5 LCS								
Turbidity			94.5		%		85-115	26-NOV-19
WG3228854-4 MB								
Turbidity			<0.10		NTU		0.1	26-NOV-19

# Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

# Quality Control Report

Workorder: L2387922

Report Date: 30-NOV-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	25-NOV-19 08:45	26-NOV-19 16:00	0.25	31	hours	EHTR-FM
pH	1	25-NOV-19 08:45	27-NOV-19 11:00	0.25	50	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.  
EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.  
EHT: Exceeded ALS recommended hold time prior to analysis.  
Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2387922 were received on 26-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



COC ID: **01-03\_Q4-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	F	N	F	N	F	N	N
RG_DW-01-03_WP_Q4-2019_NP	RG_DW-01-03	WP	N	Nov 25 11	8:45	G	7	H2SO4	H2SO4	HCL	HCL	HNO3	HNO3	
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				11/26 9:00

SERVICE REQUEST (rush - subject to availability)

Regular (default)  X

Priority (2-3 business days) - 50% surcharge

Emergency (1 Business Day) - 100% surcharge

For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name: Jennifer deWerk      Mobile #: 250-910-7287

Sampler's Signature:      Date/Time: Nov, 25, 19

FC



Teck Coal Ltd.  
ATTN: Cam Jaeger  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 26-NOV-19  
Report Date: 02-DEC-19 11:05 (MT)  
Version: FINAL

Client Phone: 250-425-8449

## Certificate of Analysis

Lab Work Order #: L2387906  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 01-07\_Q4-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2387906-1 WP 25-NOV-19 09:50 RG_DW-01- 07_WP_Q4- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	785			
	Hardness (as CaCO3) (mg/L)	466			
	pH (pH)	7.78			
	ORP (mV)	484			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	472 <sup>DLHC</sup>			
	Turbidity (NTU)	0.41			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	6.4			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	382			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	382			
	Ammonia as N (mg/L)	0.0056			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	24.4			
	Fluoride (F) (mg/L)	0.072			
	Ion Balance (%)	100			
	Nitrate (as N) (mg/L)	0.843			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.235			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0013			
	Phosphorus (P)-Total (mg/L)	0.0035			
	Sulfate (SO4) (mg/L)	60.2			
	Anion Sum (meq/L)	9.64			
	Cation Sum (meq/L)	9.64			
	Cation - Anion Balance (%)	0.0			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50		
Total Organic Carbon (mg/L)		0.88			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00013			
	Barium (Ba)-Total (mg/L)	0.124			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.020			
	Cadmium (Cd)-Total (ug/L)	0.0492			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID				
	L2387906-1 WP 25-NOV-19 09:50 RG_DW-01- 07_WP_Q4- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	116			
	Chromium (Cr)-Total (mg/L)	0.00023			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00137			
	Iron (Fe)-Total (mg/L)	0.026			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0075			
	Magnesium (Mg)-Total (mg/L)	41.6			
	Manganese (Mn)-Total (mg/L)	0.00043			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00414			
	Nickel (Ni)-Total (mg/L)	0.00066			
	Potassium (K)-Total (mg/L)	1.01			
	Selenium (Se)-Total (ug/L)	1.76			
	Silicon (Si)-Total (mg/L)	6.67			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	8.05			
	Strontium (Sr)-Total (mg/L)	0.333			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	0.00024			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.00167			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0053			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.126			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.018			
	Cadmium (Cd)-Dissolved (ug/L)	0.0473			
	Calcium (Ca)-Dissolved (mg/L)	118			
	Chromium (Cr)-Dissolved (mg/L)	0.00019			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2387906-1			
		Description	WP			
		Sampled Date	25-NOV-19			
		Sampled Time	09:50			
		Client ID	RG_DW-01-07_WP_Q4-2019_NP			
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)		0.00145			
	Iron (Fe)-Dissolved (mg/L)		0.010			
	Lead (Pb)-Dissolved (mg/L)		<0.000050			
	Lithium (Li)-Dissolved (mg/L)		0.0066			
	Magnesium (Mg)-Dissolved (mg/L)		41.4			
	Manganese (Mn)-Dissolved (mg/L)		0.00024			
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)		0.00388			
	Nickel (Ni)-Dissolved (mg/L)		0.00051			
	Potassium (K)-Dissolved (mg/L)		0.980			
	Selenium (Se)-Dissolved (ug/L)		1.61			
	Silicon (Si)-Dissolved (mg/L)		6.24			
	Silver (Ag)-Dissolved (mg/L)		<0.000010			
	Sodium (Na)-Dissolved (mg/L)		7.27			
	Strontium (Sr)-Dissolved (mg/L)		0.286			
	Thallium (Tl)-Dissolved (mg/L)		0.000011			
	Tin (Sn)-Dissolved (mg/L)		<0.00010			
	Titanium (Ti)-Dissolved (mg/L)		<0.010			
	Uranium (U)-Dissolved (mg/L)		0.00151			
	Vanadium (V)-Dissolved (mg/L)		<0.00050			
	Zinc (Zn)-Dissolved (mg/L)		0.0049			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2387906-1
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L2387906-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2387906-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2387906-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2387906-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2387906-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2387906-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2387906-1
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L2387906-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L2387906-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2387906-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2387906-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
<p>This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.</p>			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
<p>This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.</p>			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p> <p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			

## Reference Information

<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>ORP-CL</b>	Water	Oxidation reduction potential by elect.	ASTM D1498
This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
It is recommended that this analysis be conducted in the field.			
<b>P-T-L-COL-CL</b>	Water	Phosphorus (P)-Total	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
<b>PH-CL</b>	Water	pH	APHA 4500 H-Electrode
pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
<b>PO4-DO-L-COL-CL</b>	Water	Orthophosphate-Dissolved (as P)	APHA 4500-P PHOSPHORUS

## Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

01-07\_Q4-2019

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*





## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926867</b>							
<b>WG3229600-18</b>	<b>DUP</b>	<b>L2387906-1</b>						
Acidity (as CaCO3)		6.4	7.9	J	mg/L	1.5	2	27-NOV-19
<b>WG3229600-17</b>	<b>LCS</b>							
Acidity (as CaCO3)			108.2		%		85-115	27-NOV-19
<b>WG3229600-16</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	27-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927809</b>							
<b>WG3230595-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			101.3		%		85-115	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929383</b>							
<b>WG3232199-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			93.2		%		80-120	30-NOV-19
<b>WG3232199-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	30-NOV-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			96.5		%		80-120	29-NOV-19
<b>WG3231268-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	29-NOV-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4926915</b>							
<b>WG3229650-10</b>	<b>LCS</b>							
Bromide (Br)			96.0		%		85-115	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	26-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929076</b>							
<b>WG3232273-14</b>	<b>LCS</b>							
Dissolved Organic Carbon			94.8		%		80-120	29-NOV-19
<b>WG3232273-13</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b> <b>Water</b>								
Batch	R4928453							
<b>WG3231567-2</b>	<b>LCS</b>							
Total Organic Carbon			99.0		%		80-120	28-NOV-19
<b>WG3231567-1</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	28-NOV-19
<b>CL-IC-N-CL</b> <b>Water</b>								
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Chloride (Cl)			100.7		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	26-NOV-19
<b>EC-L-PCT-CL</b> <b>Water</b>								
Batch	R4927809							
<b>WG3230595-5</b>	<b>LCS</b>							
Conductivity (@ 25C)			95.5		%		90-110	27-NOV-19
<b>WG3230595-4</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	27-NOV-19
<b>F-IC-N-CL</b> <b>Water</b>								
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Fluoride (F)			100.9		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	26-NOV-19
<b>HG-D-CVAA-VA</b> <b>Water</b>								
Batch	R4927420							
<b>WG3230563-7</b>	<b>DUP</b>	<b>L2387906-1</b>						
Mercury (Hg)-Dissolved		<0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	28-NOV-19
<b>WG3230563-6</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			96.0		%		80-120	28-NOV-19
<b>WG3230563-5</b>	<b>MB</b>	<b>NP</b>						
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	28-NOV-19
<b>HG-T-CVAA-VA</b> <b>Water</b>								
Batch	R4927420							
<b>WG3230224-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			96.9		%		80-120	28-NOV-19
<b>WG3230224-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	28-NOV-19
<b>MET-D-CCMS-VA</b> <b>Water</b>								



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929383</b>							
<b>WG3232199-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			109.9		%		80-120	30-NOV-19
Antimony (Sb)-Dissolved			96.8		%		80-120	30-NOV-19
Arsenic (As)-Dissolved			100.3		%		80-120	30-NOV-19
Barium (Ba)-Dissolved			104.9		%		80-120	30-NOV-19
Bismuth (Bi)-Dissolved			94.6		%		80-120	30-NOV-19
Boron (B)-Dissolved			103.2		%		80-120	30-NOV-19
Cadmium (Cd)-Dissolved			100.8		%		80-120	30-NOV-19
Calcium (Ca)-Dissolved			100.6		%		80-120	30-NOV-19
Chromium (Cr)-Dissolved			102.1		%		80-120	30-NOV-19
Cobalt (Co)-Dissolved			99.7		%		80-120	30-NOV-19
Copper (Cu)-Dissolved			98.7		%		80-120	30-NOV-19
Iron (Fe)-Dissolved			101.2		%		80-120	30-NOV-19
Lead (Pb)-Dissolved			97.5		%		80-120	30-NOV-19
Lithium (Li)-Dissolved			91.7		%		80-120	30-NOV-19
Magnesium (Mg)-Dissolved			99.5		%		80-120	30-NOV-19
Manganese (Mn)-Dissolved			103.7		%		80-120	30-NOV-19
Molybdenum (Mo)-Dissolved			100.8		%		80-120	30-NOV-19
Nickel (Ni)-Dissolved			98.1		%		80-120	30-NOV-19
Potassium (K)-Dissolved			103.1		%		80-120	30-NOV-19
Selenium (Se)-Dissolved			96.4		%		80-120	30-NOV-19
Silicon (Si)-Dissolved			103.5		%		60-140	30-NOV-19
Silver (Ag)-Dissolved			99.6		%		80-120	30-NOV-19
Sodium (Na)-Dissolved			97.9		%		80-120	30-NOV-19
Strontium (Sr)-Dissolved			102.9		%		80-120	30-NOV-19
Thallium (Tl)-Dissolved			95.2		%		80-120	30-NOV-19
Tin (Sn)-Dissolved			100.2		%		80-120	30-NOV-19
Titanium (Ti)-Dissolved			93.1		%		80-120	30-NOV-19
Uranium (U)-Dissolved			93.0		%		80-120	30-NOV-19
Vanadium (V)-Dissolved			103.6		%		80-120	30-NOV-19
Zinc (Zn)-Dissolved			93.6		%		80-120	30-NOV-19
<b>WG3232199-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	30-NOV-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929383</b>							
<b>WG3232199-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	30-NOV-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	30-NOV-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	30-NOV-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	30-NOV-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	30-NOV-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	30-NOV-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	30-NOV-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	30-NOV-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	30-NOV-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	30-NOV-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	30-NOV-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	30-NOV-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	30-NOV-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	30-NOV-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	30-NOV-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	30-NOV-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			102.4		%		80-120	29-NOV-19
Antimony (Sb)-Total			103.4		%		80-120	29-NOV-19
Arsenic (As)-Total			102.0		%		80-120	29-NOV-19
Barium (Ba)-Total			105.5		%		80-120	29-NOV-19



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			117.2		%		80-120	29-NOV-19
Boron (B)-Total			94.1		%		80-120	29-NOV-19
Cadmium (Cd)-Total			103.4		%		80-120	29-NOV-19
Calcium (Ca)-Total			101.6		%		80-120	29-NOV-19
Chromium (Cr)-Total			105.5		%		80-120	29-NOV-19
Cobalt (Co)-Total			103.3		%		80-120	29-NOV-19
Copper (Cu)-Total			104.1		%		80-120	29-NOV-19
Iron (Fe)-Total			96.0		%		80-120	29-NOV-19
Lead (Pb)-Total			102.5		%		80-120	29-NOV-19
Lithium (Li)-Total			97.6		%		80-120	29-NOV-19
Magnesium (Mg)-Total			102.0		%		80-120	29-NOV-19
Manganese (Mn)-Total			106.3		%		80-120	29-NOV-19
Molybdenum (Mo)-Total			101.9		%		80-120	29-NOV-19
Nickel (Ni)-Total			104.4		%		80-120	29-NOV-19
Potassium (K)-Total			104.8		%		80-120	29-NOV-19
Selenium (Se)-Total			112.0		%		80-120	29-NOV-19
Silicon (Si)-Total			104.9		%		80-120	29-NOV-19
Silver (Ag)-Total			102.2		%		80-120	29-NOV-19
Sodium (Na)-Total			112.7		%		80-120	29-NOV-19
Strontium (Sr)-Total			107.6		%		80-120	29-NOV-19
Thallium (Tl)-Total			101.7		%		80-120	29-NOV-19
Tin (Sn)-Total			100.5		%		80-120	29-NOV-19
Titanium (Ti)-Total			101.4		%		80-120	29-NOV-19
Uranium (U)-Total			102.5		%		80-120	29-NOV-19
Vanadium (V)-Total			106.5		%		80-120	29-NOV-19
Zinc (Zn)-Total			103.6		%		80-120	29-NOV-19
<b>WG3231268-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	29-NOV-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	29-NOV-19



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4928266</b>							
<b>WG3231268-1</b>	<b>MB</b>							
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	29-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	29-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	29-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	29-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	29-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	29-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	29-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	29-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	29-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	29-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	29-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	29-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-NOV-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4927156</b>							
<b>WG3229901-3</b>	<b>DUP</b>	<b>L2387906-1</b>						
Ammonia as N		0.0056	0.0060		mg/L	6.9	20	27-NOV-19
<b>WG3229901-2</b>	<b>LCS</b>							
Ammonia as N			101.8		%		85-115	27-NOV-19
<b>WG3229901-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	27-NOV-19
<b>WG3229901-4</b>	<b>MS</b>	<b>L2387906-1</b>						
Ammonia as N			90.6		%		75-125	27-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Nitrite (as N)			96.2		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	26-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Nitrate (as N)			104.0		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	26-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4927295							
<b>WG3228967-3</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			224		mV		210-230	26-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4928098							
<b>WG3230708-10</b>	<b>LCS</b>							
Phosphorus (P)-Total			107.9		%		80-120	28-NOV-19
<b>WG3230708-9</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	28-NOV-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4927809							
<b>WG3230595-5</b>	<b>LCS</b>							
pH			7.03		pH		6.9-7.1	27-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4925306							
<b>WG3228641-6</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.7		%		80-120	26-NOV-19
<b>WG3228641-5</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	26-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-10</b>	<b>LCS</b>							
Sulfate (SO4)			105.3		%		90-110	26-NOV-19
<b>WG3229650-9</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4926915							
<b>WG3229650-9 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	26-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4927708							
<b>WG3229823-2 LCS</b>								
Total Dissolved Solids			98.5		%		85-115	27-NOV-19
<b>WG3229823-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	27-NOV-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4927113							
<b>WG3229857-14 LCS</b>								
Total Kjeldahl Nitrogen			103.3		%		75-125	27-NOV-19
<b>WG3229857-13 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	27-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4927767							
<b>WG3229463-4 LCS</b>								
Total Suspended Solids			93.7		%		85-115	27-NOV-19
<b>WG3229463-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	27-NOV-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4926706							
<b>WG3228854-5 LCS</b>								
Turbidity			94.5		%		85-115	26-NOV-19
<b>WG3228854-4 MB</b>								
Turbidity			<0.10		NTU		0.1	26-NOV-19



# Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2387906

Report Date: 02-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	25-NOV-19 09:50	26-NOV-19 16:00	0.25	30	hours	EHTR-FM
pH	1	25-NOV-19 09:50	27-NOV-19 11:00	0.25	49	hours	EHTR-FM

## Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2387906 were received on 26-NOV-19 09:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

**COC ID:** 01-07\_Q4-2019

**TURNAROUND TIME:**

**RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pinc Ave			Address	2559 29 st NE			Email 3:	teckcoal@equilonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F; Field, L; Lab; FT; Field & Lab; N; Non



L2387906-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS	F	N	F	N	F	N	N
RG_DW-01-07_WP_Q4-2019_NP	RG_DW-01-07	WP	N	Nov 25-19	9:50	G	7	ALS_Package-DOC	1	1	1	1	1	1	1
								ALS_Package-TRN/TOC							
								HG-D-CVAF-VA							
								HG-T-CVAF-VA							
								TECKCOAL-MET-D-VA							
								TECKCOAL-MET-T-VA							
								TECKCOAL-ROUTINE-VA							

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS**

**RELINQUISHED BY/AFFILIATION**

**DATE/TIME**

**ACCEPTED BY/AFFILIATION**

**DATE/TIME**


**SERVICE REQUEST (rush - subject to availability)**

Regular (default)	X	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	Nov 25, 19	Date/Time	
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

*[Handwritten Signature]*

11/26 9:00

*[Handwritten Signature]*

7c



Teck Coal Ltd.  
ATTN: Cam Jaeger  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 29-NOV-19  
Report Date: 04-DEC-19 17:36 (MT)  
Version: FINAL

Client Phone: 250-425-8449

## Certificate of Analysis

Lab Work Order #: L2389773  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 02-20\_Q4-2019  
Legal Site Desc:

---

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2389773-1 WP 28-NOV-19 11:08 RG_DW-02- 20_WP_Q4- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	426			
	Hardness (as CaCO3) (mg/L)	233			
	pH (pH)	7.89			
	ORP (mV)	379			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	280	DLHC		
	Turbidity (NTU)	2.37			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5.5			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	166			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	166			
	Ammonia as N (mg/L)	0.0057			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	1.84			
	Fluoride (F) (mg/L)	0.128			
	Ion Balance (%)	99.1			
	Nitrate (as N) (mg/L)	2.17			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.137	TKNI		
	Orthophosphate-Dissolved (as P) (mg/L)	<0.0010			
	Phosphorus (P)-Total (mg/L)	<0.0020			
	Sulfate (SO4) (mg/L)	61.6			
	Anion Sum (meq/L)	4.82			
	Cation Sum (meq/L)	4.77			
	Cation - Anion Balance (%)	-0.5			
	<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	<0.50		
Total Organic Carbon (mg/L)		<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	<0.00010			
	Arsenic (As)-Total (mg/L)	<0.00010			
	Barium (Ba)-Total (mg/L)	0.0806			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	<0.010			
	Cadmium (Cd)-Total (ug/L)	0.0066			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2389773-1 WP 28-NOV-19 11:08 RG_DW-02- 20_WP_Q4- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	61.8			
	Chromium (Cr)-Total (mg/L)	0.00022			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00314			
	Iron (Fe)-Total (mg/L)	0.170			
	Lead (Pb)-Total (mg/L)	0.000096			
	Lithium (Li)-Total (mg/L)	0.0068			
	Magnesium (Mg)-Total (mg/L)	20.2			
	Manganese (Mn)-Total (mg/L)	0.00217			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00109			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.617			
	Selenium (Se)-Total (ug/L)	9.67			
	Silicon (Si)-Total (mg/L)	2.41			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	2.50			
	Strontium (Sr)-Total (mg/L)	0.220			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	0.00015			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000979			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	0.0053			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	<0.00010			
	Barium (Ba)-Dissolved (mg/L)	0.0807			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (ug/L)	0.0062			
	Calcium (Ca)-Dissolved (mg/L)	61.3			
	Chromium (Cr)-Dissolved (mg/L)	0.00014			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2389773-1 WP 28-NOV-19 11:08 RG_DW-02- 20_WP_Q4- 2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00356			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	0.000066			
	Lithium (Li)-Dissolved (mg/L)	0.0064			
	Magnesium (Mg)-Dissolved (mg/L)	19.4			
	Manganese (Mn)-Dissolved (mg/L)	0.00093			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00107			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.594			
	Selenium (Se)-Dissolved (ug/L)	10.2			
	Silicon (Si)-Dissolved (mg/L)	2.25			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.38			
	Strontium (Sr)-Dissolved (mg/L)	0.207			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000968			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0088			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2389773-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2389773-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2389773-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2389773-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2389773-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2389773-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2389773-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2389773-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2389773-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2389773-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2389773-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2389773-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2389773-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2389773-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			



## Reference Information

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.

TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

**CL-IC-N-CL** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**EC-L-PCT-CL** Water Electrical Conductivity (EC) APHA 2510B

Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.

**F-IC-N-CL** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-BC-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**NH3-L-F-CL** Water Ammonia, Total (as N) J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

**NO2-L-IC-N-CL** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-CL** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**ORP-CL** Water Oxidation reduction potential by elect. ASTM D1498

This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL** Water Phosphorus (P)-Total APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL** Water pH APHA 4500 H-Electrode

## Reference Information

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL** Water Orthophosphate-Dissolved (as P) APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL** Water Total Dissolved Solids APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL** Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL** Water Total Kjeldahl Nitrogen APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL** Water Total Suspended Solids APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL** Water Turbidity APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

02-20\_Q4-2019

### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4929956							
<b>WG3233033-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	29-NOV-19
<b>WG3233033-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	29-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4929946							
<b>WG3233024-6</b>	<b>DUP</b>	<b>L2389773-1</b>						
Alkalinity, Total (as CaCO3)		166	171		mg/L	2.8	20	29-NOV-19
<b>WG3233024-5</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.6		%		85-115	29-NOV-19
<b>WG3233024-4</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932390							
<b>WG3234226-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.8		%		80-120	03-DEC-19
<b>WG3234226-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932390							
<b>WG3233545-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			100.2		%		80-120	03-DEC-19
<b>WG3233545-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	03-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Bromide (Br)			109.4		%		85-115	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4929998							
<b>WG3233150-2</b>	<b>LCS</b>							
Dissolved Organic Carbon			96.8		%		80-120	01-DEC-19
<b>WG3233150-1</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	01-DEC-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							





## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>HG-T-CVAA-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4932809</b>							
<b>WG3234639-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-DEC-19
<b>MET-D-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234226-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.0		%		80-120	03-DEC-19
Antimony (Sb)-Dissolved			96.5		%		80-120	03-DEC-19
Arsenic (As)-Dissolved			98.0		%		80-120	03-DEC-19
Barium (Ba)-Dissolved			98.7		%		80-120	03-DEC-19
Bismuth (Bi)-Dissolved			98.0		%		80-120	03-DEC-19
Boron (B)-Dissolved			99.3		%		80-120	03-DEC-19
Cadmium (Cd)-Dissolved			97.6		%		80-120	03-DEC-19
Calcium (Ca)-Dissolved			98.7		%		80-120	03-DEC-19
Chromium (Cr)-Dissolved			99.0		%		80-120	03-DEC-19
Cobalt (Co)-Dissolved			97.5		%		80-120	03-DEC-19
Copper (Cu)-Dissolved			96.9		%		80-120	03-DEC-19
Iron (Fe)-Dissolved			99.6		%		80-120	03-DEC-19
Lead (Pb)-Dissolved			97.6		%		80-120	03-DEC-19
Lithium (Li)-Dissolved			99.0		%		80-120	03-DEC-19
Magnesium (Mg)-Dissolved			102.5		%		80-120	03-DEC-19
Manganese (Mn)-Dissolved			100.9		%		80-120	03-DEC-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	03-DEC-19
Nickel (Ni)-Dissolved			97.3		%		80-120	03-DEC-19
Potassium (K)-Dissolved			101.7		%		80-120	03-DEC-19
Selenium (Se)-Dissolved			101.3		%		80-120	03-DEC-19
Silicon (Si)-Dissolved			107.7		%		60-140	03-DEC-19
Silver (Ag)-Dissolved			96.7		%		80-120	03-DEC-19
Sodium (Na)-Dissolved			105.8		%		80-120	03-DEC-19
Strontium (Sr)-Dissolved			100.7		%		80-120	03-DEC-19
Thallium (Tl)-Dissolved			99.1		%		80-120	03-DEC-19
Tin (Sn)-Dissolved			97.1		%		80-120	03-DEC-19
Titanium (Ti)-Dissolved			89.5		%		80-120	03-DEC-19
Uranium (U)-Dissolved			100.4		%		80-120	03-DEC-19
Vanadium (V)-Dissolved			98.3		%		80-120	03-DEC-19



## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234226-2</b>	<b>LCS</b>							
Zinc (Zn)-Dissolved			96.4		%		80-120	03-DEC-19
<b>WG3234226-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3233545-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			115.7		%		80-120	03-DEC-19
Antimony (Sb)-Total			102.6		%		80-120	03-DEC-19
Arsenic (As)-Total			102.8		%		80-120	03-DEC-19
Barium (Ba)-Total			102.2		%		80-120	03-DEC-19
Bismuth (Bi)-Total			102.7		%		80-120	03-DEC-19
Boron (B)-Total			99.6		%		80-120	03-DEC-19
Cadmium (Cd)-Total			100.5		%		80-120	03-DEC-19
Calcium (Ca)-Total			101.7		%		80-120	03-DEC-19
Chromium (Cr)-Total			103.7		%		80-120	03-DEC-19
Cobalt (Co)-Total			100.1		%		80-120	03-DEC-19
Copper (Cu)-Total			100.6		%		80-120	03-DEC-19
Iron (Fe)-Total			105.8		%		80-120	03-DEC-19
Lead (Pb)-Total			105.2		%		80-120	03-DEC-19
Lithium (Li)-Total			101.0		%		80-120	03-DEC-19
Magnesium (Mg)-Total			106.3		%		80-120	03-DEC-19
Manganese (Mn)-Total			104.3		%		80-120	03-DEC-19
Molybdenum (Mo)-Total			103.5		%		80-120	03-DEC-19
Nickel (Ni)-Total			100.7		%		80-120	03-DEC-19
Potassium (K)-Total			109.2		%		80-120	03-DEC-19
Selenium (Se)-Total			103.8		%		80-120	03-DEC-19
Silicon (Si)-Total			109.1		%		80-120	03-DEC-19
Silver (Ag)-Total			99.9		%		80-120	03-DEC-19
Sodium (Na)-Total			110.4		%		80-120	03-DEC-19
Strontium (Sr)-Total			106.8		%		80-120	03-DEC-19
Thallium (Tl)-Total			100.3		%		80-120	03-DEC-19
Tin (Sn)-Total			101.4		%		80-120	03-DEC-19
Titanium (Ti)-Total			97.6		%		80-120	03-DEC-19
Uranium (U)-Total			106.3		%		80-120	03-DEC-19
Vanadium (V)-Total			103.4		%		80-120	03-DEC-19
Zinc (Zn)-Total			100.9		%		80-120	03-DEC-19
<b>WG3233545-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-DEC-19



## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4932390</b>							
<b>WG3233545-1</b>	<b>MB</b>							
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-DEC-19
<b>NH3-L-F-CL</b>		<b>Water</b>						
<b>Batch</b>	<b>R4929208</b>							
<b>WG3231969-2</b>	<b>LCS</b>							
Ammonia as N			98.5		%		85-115	29-NOV-19
<b>WG3231969-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-NOV-19
<b>NO2-L-IC-N-CL</b>		<b>Water</b>						





## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Nitrate (as N)			101.4		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4928914							
<b>WG3232011-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	29-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4930023							
<b>WG3233014-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			94.1		%		80-120	02-DEC-19
<b>WG3233014-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	02-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4929946							
<b>WG3233024-6</b>	<b>DUP</b>	<b>L2389773-1</b>						
pH		7.89	7.91	J	pH	0.02	0.2	29-NOV-19
<b>WG3233024-5</b>	<b>LCS</b>							
pH			7.00		pH		6.9-7.1	29-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4928911							
<b>WG3231873-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	29-NOV-19
<b>WG3231873-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Sulfate (SO4)			<0.30		mg/L		0.3	29-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4931707							
<b>WG3233826-2</b>	<b>LCS</b>							
Total Dissolved Solids			103.7		%		85-115	03-DEC-19
<b>WG3233826-1</b>	<b>MB</b>							
Total Dissolved Solids			<10		mg/L		10	03-DEC-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4929143							
<b>WG3232310-14</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			96.7		%		75-125	30-NOV-19
<b>WG3232310-13</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4931108							
<b>WG3233082-4</b>	<b>LCS</b>							
Total Suspended Solids			93.5		%		85-115	02-DEC-19
<b>WG3233082-3</b>	<b>MB</b>							
Total Suspended Solids			<1.0		mg/L		1	02-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4928902							
<b>WG3231985-2</b>	<b>LCS</b>							
Turbidity			97.0		%		85-115	29-NOV-19
<b>WG3231985-1</b>	<b>MB</b>							
Turbidity			<0.10		NTU		0.1	29-NOV-19

# Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

---

# Quality Control Report

Workorder: L2389773

Report Date: 04-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-NOV-19 11:08	29-NOV-19 14:45	0.25	28	hours	EHTR-FM
pH	1	28-NOV-19 11:08	29-NOV-19 14:00	0.25	27	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2389773 were received on 29-NOV-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **02-20\_Q4-2019**

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@equisonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

**SAMPLE DETAILS**

**ANALYSIS REQUESTED**

Filtered: F: Field, L: Lab, TL: Field & Lab, N: None

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ANALYSIS REQUESTED										
								F	N	F	N	F	N	N				
								H2SO4	H2SO4	HCL	HCL	HNO3	HNO3					
								ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA				
RG_DW-02-20_WP_Q4-2019_NP	RG_DW-02-20	WP	N	Nov 28	11:08	G	7	1	1	1	1	1	1	1				

**ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS:**

**RELINQUISHED BY/AFFILIATION:**

**DATE/TIME:**

**ACCEPTED BY/AFFILIATION:**

**DATE/TIME:**

*Jennifer de Werk* 11/24/19 9:30

**SERVICE REQUEST (rush - subject to availability)**

Regular (default) X	Priority (2-3 business days) - 50% surcharge	Emergency (1 Business Day) - 100% surcharge	For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Name	Jennifer de Werk	Mobile #	250-910-7287
				Sampler's Signature	<i>Jennifer de Werk</i>	Date/Time	Nov 28, 2019



L2389773-COFC



Teck Coal Ltd.  
ATTN: Cam Jaeger  
421 Pine Avenue  
Sparwood BC V0B 2G0

Date Received: 29-NOV-19  
Report Date: 04-DEC-19 12:09 (MT)  
Version: FINAL

Client Phone: 250-425-8449

## Certificate of Analysis

Lab Work Order #: L2389715  
Project P.O. #: VPO00618734  
Job Reference: REGIONAL EFFECTS PROGRAM  
C of C Numbers: 03-04\_Q4-2019  
Legal Site Desc:

Lyudmyla Shvets, B.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2389715-1 WP 28-NOV-19 14:29 RG_DW-03-04_WP_Q4-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (@ 25C) (uS/cm)	485			
	Hardness (as CaCO3) (mg/L)	249			
	pH (pH)	7.96			
	ORP (mV)	414			
	Total Suspended Solids (mg/L)	<1.0			
	Total Dissolved Solids (mg/L)	311	DLHC		
	Turbidity (NTU)	0.19			
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	4.8			
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	170			
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)	170			
	Ammonia as N (mg/L)	<0.0050			
	Bromide (Br) (mg/L)	<0.050			
	Chloride (Cl) (mg/L)	7.66			
	Fluoride (F) (mg/L)	0.160			
	Ion Balance (%)	98.4			
	Nitrate (as N) (mg/L)	1.02			
	Nitrite (as N) (mg/L)	<0.0010			
	Total Kjeldahl Nitrogen (mg/L)	0.325			
	Orthophosphate-Dissolved (as P) (mg/L)	0.0027			
	Phosphorus (P)-Total (mg/L)	0.0030			
	Sulfate (SO4) (mg/L)	80.8			
	Anion Sum (meq/L)	5.37			
	Cation Sum (meq/L)	5.28			
	Cation - Anion Balance (%)	-0.8			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.13			
	Total Organic Carbon (mg/L)	1.11			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	<0.0030			
	Antimony (Sb)-Total (mg/L)	0.00012			
	Arsenic (As)-Total (mg/L)	0.00012			
	Barium (Ba)-Total (mg/L)	0.139			
	Beryllium (Be)-Total (ug/L)	<0.020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.013			
	Cadmium (Cd)-Total (ug/L)	0.0151			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L2389715-1 WP 28-NOV-19 14:29 RG_DW-03-04_WP_Q4-2019_NP			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Calcium (Ca)-Total (mg/L)	63.4			
	Chromium (Cr)-Total (mg/L)	0.00018			
	Cobalt (Co)-Total (ug/L)	<0.10			
	Copper (Cu)-Total (mg/L)	0.00070			
	Iron (Fe)-Total (mg/L)	<0.010			
	Lead (Pb)-Total (mg/L)	<0.000050			
	Lithium (Li)-Total (mg/L)	0.0096			
	Magnesium (Mg)-Total (mg/L)	21.2			
	Manganese (Mn)-Total (mg/L)	<0.00010			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00125			
	Nickel (Ni)-Total (mg/L)	<0.00050			
	Potassium (K)-Total (mg/L)	0.952			
	Selenium (Se)-Total (ug/L)	7.76			
	Silicon (Si)-Total (mg/L)	3.00			
	Silver (Ag)-Total (mg/L)	<0.000010			
	Sodium (Na)-Total (mg/L)	6.53			
	Strontium (Sr)-Total (mg/L)	0.145			
	Thallium (Tl)-Total (mg/L)	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010			
	Uranium (U)-Total (mg/L)	0.000893			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0030			
	Antimony (Sb)-Dissolved (mg/L)	0.00011			
	Arsenic (As)-Dissolved (mg/L)	0.00011			
	Barium (Ba)-Dissolved (mg/L)	0.137			
	Beryllium (Be)-Dissolved (ug/L)	<0.020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.013			
	Cadmium (Cd)-Dissolved (ug/L)	0.0108			
	Calcium (Ca)-Dissolved (mg/L)	63.3			
	Chromium (Cr)-Dissolved (mg/L)	0.00014			
	Cobalt (Co)-Dissolved (ug/L)	<0.10			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>				
	L2389715-1 WP 28-NOV-19 14:29 RG_DW-03- 04_WP_Q4- 2019_NP				
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Copper (Cu)-Dissolved (mg/L)	0.00043			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0099			
	Magnesium (Mg)-Dissolved (mg/L)	22.1			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00119			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050			
	Potassium (K)-Dissolved (mg/L)	0.959			
	Selenium (Se)-Dissolved (ug/L)	8.64			
	Silicon (Si)-Dissolved (mg/L)	2.70			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	6.35			
	Strontium (Sr)-Dissolved (mg/L)	0.138			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.000943			
	Vanadium (V)-Dissolved (mg/L)	<0.00050			
	Zinc (Zn)-Dissolved (mg/L)	0.0017			

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L2389715-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2389715-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2389715-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2389715-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2389715-1
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2389715-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2389715-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2389715-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2389715-1
Matrix Spike	Arsenic (As)-Total	MS-B	L2389715-1
Matrix Spike	Cadmium (Cd)-Total	MS-B	L2389715-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2389715-1
Matrix Spike	Lithium (Li)-Total	MS-B	L2389715-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2389715-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2389715-1
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L2389715-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2389715-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2389715-1
Matrix Spike	Uranium (U)-Total	MS-B	L2389715-1
Matrix Spike	Zinc (Zn)-Total	MS-B	L2389715-1

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>ACIDITY-PCT-CL</b>	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
<b>ALK-MAN-CL</b>	Water	Alkalinity (Species) by Manual Titration	APHA 2320 ALKALINITY
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<b>BE-D-L-CCMS-VA</b>	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
<b>BE-T-L-CCMS-VA</b>	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
<b>BR-L-IC-N-CL</b>	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>C-DIS-ORG-LOW-CL</b>	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.  
 TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

## Reference Information

<b>C-TOT-ORG-LOW-CL</b>	Water	Total Organic Carbon	APHA 5310 TOTAL ORGANIC CARBON (TOC)
<p>This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.</p>			
<p>The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.            TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.</p>			
<b>CL-IC-N-CL</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>EC-L-PCT-CL</b>	Water	Electrical Conductivity (EC)	APHA 2510B
<p>Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C.</p>			
<b>F-IC-N-CL</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.</p>			
<b>HG-D-CVAA-VA</b>	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
<p>Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
<b>HG-T-CVAA-VA</b>	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
<p>Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.</p>			
<b>IONBALANCE-BC-CL</b>	Water	Ion Balance Calculation	APHA 1030E
<p>Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.</p>			
<p>Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:</p>			
<p>Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]</p>			
<b>MET-D-CCMS-VA</b>	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
<p>Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>MET-T-CCMS-VA</b>	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
<p>Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.</p>			
<p>Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.</p>			
<b>NH3-L-F-CL</b>	Water	Ammonia, Total (as N)	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.</p>			
<b>NO2-L-IC-N-CL</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>NO3-L-IC-N-CL</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>ORP-CL</b>	Water	Oxidation redution potential by elect.	ASTM D1498
<p>This analysis is carried out in accordance with the procedure described in the "ASTM" method D1498 "Oxidation-Reduction Potential of Water" published by the American Society for Testing and Materials (ASTM). Results are reported as observed oxidation-reduction potential of the platinum</p>			

## Reference Information

metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

**P-T-L-COL-CL**                      Water              Phosphorus (P)-Total    APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

**PH-CL**                                      Water              pH    APHA 4500 H-Electrode

pH is determined in the laboratory using a pH electrode. All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

**PO4-DO-L-COL-CL**                      Water              Orthophosphate-Dissolved (as P)    APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

**SO4-IC-N-CL**                              Water              Sulfate in Water by IC    EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**SOLIDS-TDS-CL**                              Water              Total Dissolved Solids    APHA 2540 C

A well-mixed sample is filtered through a glass fibre filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2 °C. The increase in vial weight represents the total dissolved solids (TDS).

**TECKCOAL-IONBAL-CL**                      Water              Ion Balance Calculation    APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

**TKN-L-F-CL**                              Water              Total Kjeldahl Nitrogen    APHA 4500-NORG (TKN)

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

**TSS-L-CL**                                      Water              Total Suspended Solids    APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

**TURBIDITY-CL**                              Water              Turbidity    APHA 2130 B-Nephelometer

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

**Chain of Custody Numbers:**

03-04\_Q4-2019

## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 1 of 10

Client: Teck Coal Ltd.  
 421 Pine Avenue  
 Sparwood BC V0B 2G0

Contact: Cam Jaeger

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ACIDITY-PCT-CL</b>								
	<b>Water</b>							
Batch	R4929956							
<b>WG3233033-2</b>	<b>LCS</b>							
Acidity (as CaCO3)			100.9		%		85-115	29-NOV-19
<b>WG3233033-1</b>	<b>MB</b>							
Acidity (as CaCO3)			1.7		mg/L		2	29-NOV-19
<b>ALK-MAN-CL</b>								
	<b>Water</b>							
Batch	R4929946							
<b>WG3233024-2</b>	<b>LCS</b>							
Alkalinity, Total (as CaCO3)			100.5		%		85-115	29-NOV-19
<b>WG3233024-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	29-NOV-19
<b>BE-D-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932390							
<b>WG3234226-2</b>	<b>LCS</b>							
Beryllium (Be)-Dissolved			99.8		%		80-120	03-DEC-19
<b>WG3234226-1</b>	<b>MB</b>	<b>NP</b>						
Beryllium (Be)-Dissolved			<0.000020		mg/L		0.00002	03-DEC-19
<b>BE-T-L-CCMS-VA</b>								
	<b>Water</b>							
Batch	R4932389							
<b>WG3233544-2</b>	<b>LCS</b>							
Beryllium (Be)-Total			89.0		%		80-120	03-DEC-19
<b>WG3233544-1</b>	<b>MB</b>							
Beryllium (Be)-Total			<0.000020		mg/L		0.00002	03-DEC-19
<b>BR-L-IC-N-CL</b>								
	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Bromide (Br)			109.4		%		85-115	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Bromide (Br)			<0.050		mg/L		0.05	29-NOV-19
<b>C-DIS-ORG-LOW-CL</b>								
	<b>Water</b>							
Batch	R4929076							
<b>WG3232273-6</b>	<b>LCS</b>							
Dissolved Organic Carbon			102.9		%		80-120	29-NOV-19
<b>WG3232273-5</b>	<b>MB</b>							
Dissolved Organic Carbon			<0.50		mg/L		0.5	29-NOV-19
<b>C-TOT-ORG-LOW-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 2 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LOW-CL</b>	<b>Water</b>							
Batch	R4929076							
<b>WG3232273-6</b>	<b>LCS</b>							
Total Organic Carbon			104.0		%		80-120	29-NOV-19
<b>WG3232273-5</b>	<b>MB</b>							
Total Organic Carbon			<0.50		mg/L		0.5	29-NOV-19
<b>CL-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Chloride (Cl)			99.1		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	29-NOV-19
<b>EC-L-PCT-CL</b>	<b>Water</b>							
Batch	R4929946							
<b>WG3233024-2</b>	<b>LCS</b>							
Conductivity (@ 25C)			97.2		%		90-110	29-NOV-19
<b>WG3233024-1</b>	<b>MB</b>							
Conductivity (@ 25C)			<2.0		uS/cm		2	29-NOV-19
<b>F-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Fluoride (F)			104.2		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	29-NOV-19
<b>HG-D-CVAA-VA</b>	<b>Water</b>							
Batch	R4930376							
<b>WG3233278-2</b>	<b>LCS</b>							
Mercury (Hg)-Dissolved			100.3		%		80-120	03-DEC-19
<b>WG3233278-1</b>	<b>MB</b>							
Mercury (Hg)-Dissolved			<0.000005C		mg/L		0.000005	03-DEC-19
<b>HG-T-CVAA-VA</b>	<b>Water</b>							
Batch	R4932809							
<b>WG3234639-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			105.7		%		80-120	04-DEC-19
<b>WG3234639-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	04-DEC-19
<b>MET-D-CCMS-VA</b>	<b>Water</b>							



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234226-2</b>	<b>LCS</b>							
Aluminum (Al)-Dissolved			102.0		%		80-120	03-DEC-19
Antimony (Sb)-Dissolved			96.5		%		80-120	03-DEC-19
Arsenic (As)-Dissolved			98.0		%		80-120	03-DEC-19
Barium (Ba)-Dissolved			98.7		%		80-120	03-DEC-19
Bismuth (Bi)-Dissolved			98.0		%		80-120	03-DEC-19
Boron (B)-Dissolved			99.3		%		80-120	03-DEC-19
Cadmium (Cd)-Dissolved			97.6		%		80-120	03-DEC-19
Calcium (Ca)-Dissolved			98.7		%		80-120	03-DEC-19
Chromium (Cr)-Dissolved			99.0		%		80-120	03-DEC-19
Cobalt (Co)-Dissolved			97.5		%		80-120	03-DEC-19
Copper (Cu)-Dissolved			96.9		%		80-120	03-DEC-19
Iron (Fe)-Dissolved			99.6		%		80-120	03-DEC-19
Lead (Pb)-Dissolved			97.6		%		80-120	03-DEC-19
Lithium (Li)-Dissolved			99.0		%		80-120	03-DEC-19
Magnesium (Mg)-Dissolved			102.5		%		80-120	03-DEC-19
Manganese (Mn)-Dissolved			100.9		%		80-120	03-DEC-19
Molybdenum (Mo)-Dissolved			100.7		%		80-120	03-DEC-19
Nickel (Ni)-Dissolved			97.3		%		80-120	03-DEC-19
Potassium (K)-Dissolved			101.7		%		80-120	03-DEC-19
Selenium (Se)-Dissolved			101.3		%		80-120	03-DEC-19
Silicon (Si)-Dissolved			107.7		%		60-140	03-DEC-19
Silver (Ag)-Dissolved			96.7		%		80-120	03-DEC-19
Sodium (Na)-Dissolved			105.8		%		80-120	03-DEC-19
Strontium (Sr)-Dissolved			100.7		%		80-120	03-DEC-19
Thallium (Tl)-Dissolved			99.1		%		80-120	03-DEC-19
Tin (Sn)-Dissolved			97.1		%		80-120	03-DEC-19
Titanium (Ti)-Dissolved			89.5		%		80-120	03-DEC-19
Uranium (U)-Dissolved			100.4		%		80-120	03-DEC-19
Vanadium (V)-Dissolved			98.3		%		80-120	03-DEC-19
Zinc (Zn)-Dissolved			96.4		%		80-120	03-DEC-19
<b>WG3234226-1</b>	<b>MB</b>	<b>NP</b>						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19





## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-D-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932390</b>							
<b>WG3234226-1</b>	<b>MB</b>	<b>NP</b>						
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-DEC-19
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233544-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			104.5		%		80-120	03-DEC-19
Antimony (Sb)-Total			100.5		%		80-120	03-DEC-19
Arsenic (As)-Total			99.8		%		80-120	03-DEC-19
Barium (Ba)-Total			99.0		%		80-120	03-DEC-19



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>		<b>Water</b>						
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233544-2</b>	<b>LCS</b>							
Bismuth (Bi)-Total			96.3		%		80-120	03-DEC-19
Boron (B)-Total			90.7		%		80-120	03-DEC-19
Cadmium (Cd)-Total			100.8		%		80-120	03-DEC-19
Calcium (Ca)-Total			94.8		%		80-120	03-DEC-19
Chromium (Cr)-Total			100.4		%		80-120	03-DEC-19
Cobalt (Co)-Total			101.6		%		80-120	03-DEC-19
Copper (Cu)-Total			101.4		%		80-120	03-DEC-19
Iron (Fe)-Total			99.4		%		80-120	03-DEC-19
Lead (Pb)-Total			96.0		%		80-120	03-DEC-19
Lithium (Li)-Total			90.0		%		80-120	03-DEC-19
Magnesium (Mg)-Total			93.8		%		80-120	03-DEC-19
Manganese (Mn)-Total			97.9		%		80-120	03-DEC-19
Molybdenum (Mo)-Total			98.6		%		80-120	03-DEC-19
Nickel (Ni)-Total			99.9		%		80-120	03-DEC-19
Potassium (K)-Total			101.9		%		80-120	03-DEC-19
Selenium (Se)-Total			96.4		%		80-120	03-DEC-19
Silicon (Si)-Total			119.4		%		80-120	03-DEC-19
Silver (Ag)-Total			98.1		%		80-120	03-DEC-19
Sodium (Na)-Total			104.6		%		80-120	03-DEC-19
Strontium (Sr)-Total			106.4		%		80-120	03-DEC-19
Thallium (Tl)-Total			96.8		%		80-120	03-DEC-19
Tin (Sn)-Total			99.1		%		80-120	03-DEC-19
Titanium (Ti)-Total			95.9		%		80-120	03-DEC-19
Vanadium (V)-Total			100.9		%		80-120	03-DEC-19
Zinc (Zn)-Total			105.2		%		80-120	03-DEC-19
<b>WG3233544-1</b>		<b>MB</b>						
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-DEC-19



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-VA</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4932389</b>							
<b>WG3233544-1</b>	<b>MB</b>							
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-DEC-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-DEC-19
<b>NH3-L-F-CL</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R4929208</b>							
<b>WG3231969-3</b>	<b>DUP</b>	<b>L2389715-1</b>						
Ammonia as N		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	01-DEC-19
<b>WG3231969-2</b>	<b>LCS</b>							
Ammonia as N			98.5		%		85-115	29-NOV-19
<b>WG3231969-1</b>	<b>MB</b>							
Ammonia as N			<0.0050		mg/L		0.005	29-NOV-19
<b>WG3231969-4</b>	<b>MS</b>	<b>L2389715-1</b>						
Ammonia as N			96.5		%		75-125	29-NOV-19
<b>NO2-L-IC-N-CL</b>								
	<b>Water</b>							



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NO2-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Nitrite (as N)			100.4		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Nitrite (as N)			<0.0010		mg/L		0.001	29-NOV-19
<b>NO3-L-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Nitrate (as N)			101.4		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							
Nitrate (as N)			<0.0050		mg/L		0.005	29-NOV-19
<b>ORP-CL</b>	<b>Water</b>							
Batch	R4928914							
<b>WG3232011-1</b>	<b>CRM</b>	<b>CL-ORP</b>						
ORP			228		mV		210-230	29-NOV-19
<b>P-T-L-COL-CL</b>	<b>Water</b>							
Batch	R4929628							
<b>WG3232857-2</b>	<b>LCS</b>							
Phosphorus (P)-Total			100.6		%		80-120	01-DEC-19
<b>WG3232857-1</b>	<b>MB</b>							
Phosphorus (P)-Total			<0.0020		mg/L		0.002	01-DEC-19
<b>PH-CL</b>	<b>Water</b>							
Batch	R4929946							
<b>WG3233024-2</b>	<b>LCS</b>							
pH			7.01		pH		6.9-7.1	29-NOV-19
<b>PO4-DO-L-COL-CL</b>	<b>Water</b>							
Batch	R4928911							
<b>WG3231873-2</b>	<b>LCS</b>							
Orthophosphate-Dissolved (as P)			100.8		%		80-120	29-NOV-19
<b>WG3231873-1</b>	<b>MB</b>							
Orthophosphate-Dissolved (as P)			<0.0010		mg/L		0.001	29-NOV-19
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-6</b>	<b>LCS</b>							
Sulfate (SO4)			100.6		%		90-110	29-NOV-19
<b>WG3232305-5</b>	<b>MB</b>							



## Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 8 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SO4-IC-N-CL</b>	<b>Water</b>							
Batch	R4929110							
<b>WG3232305-5 MB</b>								
Sulfate (SO4)			<0.30		mg/L		0.3	29-NOV-19
<b>SOLIDS-TDS-CL</b>	<b>Water</b>							
Batch	R4931109							
<b>WG3233086-2 LCS</b>								
Total Dissolved Solids			102.9		%		85-115	02-DEC-19
<b>WG3233086-1 MB</b>								
Total Dissolved Solids			<10		mg/L		10	02-DEC-19
<b>TKN-L-F-CL</b>	<b>Water</b>							
Batch	R4929143							
<b>WG3232310-11 DUP</b>		<b>L2389715-1</b>						
Total Kjeldahl Nitrogen		0.325	0.296		mg/L	9.2	20	30-NOV-19
<b>WG3232310-10 LCS</b>								
Total Kjeldahl Nitrogen			96.9		%		75-125	30-NOV-19
<b>WG3232310-9 MB</b>								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	30-NOV-19
<b>WG3232310-12 MS</b>		<b>L2389715-1</b>						
Total Kjeldahl Nitrogen			110.7		%		70-130	30-NOV-19
<b>TSS-L-CL</b>	<b>Water</b>							
Batch	R4931108							
<b>WG3233082-4 LCS</b>								
Total Suspended Solids			93.5		%		85-115	02-DEC-19
<b>WG3233082-3 MB</b>								
Total Suspended Solids			<1.0		mg/L		1	02-DEC-19
<b>TURBIDITY-CL</b>	<b>Water</b>							
Batch	R4928902							
<b>WG3231985-2 LCS</b>								
Turbidity			97.0		%		85-115	29-NOV-19
<b>WG3231985-1 MB</b>								
Turbidity			<0.10		NTU		0.1	29-NOV-19

# Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 9 of 10

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

# Quality Control Report

Workorder: L2389715

Report Date: 04-DEC-19

Page 10 of 10

## Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
<b>Physical Tests</b>							
Oxidation reduction potential by elect.	1	28-NOV-19 14:29	29-NOV-19 14:45	0.25	24	hours	EHTR-FM
pH	1	28-NOV-19 14:29	29-NOV-19 14:00	0.25	24	hours	EHTR-FM

## Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.  
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2389715 were received on 29-NOV-19 09:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

COC ID: **03-04\_Q4-2019**      TURNAROUND TIME:      RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO				
Facility Name / Job#	Regional Effects Program			Lab Name	ALS Calgary			Report Format / Distribution	Excel	PDF	EDD	
Project Manager	Cam Jaeger			Lab Contact	Lyudmyla Shvets			Email 1:	cam.jaeger@teck.com	X	X	X
Email	cam.jaeger@teck.com			Email	lyudmyla.shvets@alsglobal.com			Email 2:	jennifer.dewerk@teck.com	X	X	X
Address	421 Pine Ave			Address	2559 29 st NE			Email 3:	teckcoal@ecvonline.com	X	X	X
								Email 4:				X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5:				
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada					
Phone Number	250-425-8449			Phone Number	403-407-1800			PO number	618734			

SAMPLE DETAILS							ANALYSIS REQUESTED							Filter: F: Field, L: Lab, FL: Field & Lab, N: None			
Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Com p	# Of Cont.	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-D-CVAF-VA	HG-T-CVAF-VA	TECKCOAL-MET-D-VA	TECKCOAL-MET-T-VA	TECKCOAL-ROUTINE-VA			
RG_DW-03-04_WP_Q4-2019_NP	RG_DW-03-04	WP	N	Nov 28	14:27	G	7	1	1	1	1	1	1	1			

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
				Nov 28 9:30

SERVICE REQUEST (rush subject to availability)	Sampler's Name	Mobile #
Regular (default) <input checked="" type="checkbox"/> X	Jennifer de Werk	250-910-7287
Priority (2-3 business days) - 50% surcharge		
Emergency (1 Business Day) - 100% surcharge		
For Emergency <1 Day, ASAP or Weekend - Contact ALS	Sampler's Signature	Date/Time

Nov 28, 2019  
2